Telephony.

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Some New Light on "Press Bureau" Jenkins and His Work.

W. C. Jenkins, that gallant young cavalier of the Bell Press Bureau, who lowers his lance and charges boldly into fields which are entirely unknown to him; who shapes his course according to the "dope" handed out to him from the starter's box of the Bell Press Bureau; and who knows not, neither cares, whither his wild sallies lead him, will find material for thought (assuming that he is capable of sustained thought) in the report of the Minnesota Central Telephone Co., which appears elsewhere in this paper.

This paper not long ago exposed some of the fallacies and absurdities of a neat little excursion into the telephone field essayed by this same chivalrous and energetic Jenkins, of romantic "monaker." Among other scenes which Jenkins endeavored to describe was Minnesota. Here he evidently imagined he was on sure ground, lacking the foresight or exact knowledge which would lead the experienced writer to examine the facts before he started, lest some should rise to trip him. That is, he must have overlooked the comparative records of the Tri-State Independent and the Northwestern Bell, and he also was not aware of the fact that the Minnesota Central Bell was about to make public a most astonishing statement of failure.

The first matter was comprehensively dealt with by TELEPHONY recently; the second is considered at some length in this issue. As specimens of Bell publicity work they rank with the average. Because, when analyzed, they are shown to be buncome, pure and simple, which is usual.

"True, a large number of these Independent organizations have passed out of existence," says Jenkins in his article in the *National Magazine*, referring to the Minnesota situation, "and remain only as a matter of painful history to a great many well-meaning, but misguided, business men." Alas! And alas! Jenkins, but what of the unfortunate minority stockholders of the Minnesota Central under Bell control, who see their hopes of dividends growing less every year and who have nowhere to turn save to President Wainman, with his sorrowful explanation which does not explain, and his gloomy outlook on the future? Their company is only spending above 93 per cent for operation and there is no relief in sight, because, as Mr. Wainman says, "expenses have been reduced to the *very lowest possible* figure and every effort made to increase the amount of revenue."

As a correspondent writes us: "The minority stockholders must be long suffering, and calloused by repeated castigation, or they would take the usual means of protecting their investment from further depreciation."

Telephony's Directory of Permanent Reference Value.

Those who have received the "Telephone Buyers' Guide," a copy of which is now being mailed free to every telephone company by the publishers of TELEPHONY, express hearty approval of the book as one which will be a valuable year-round companion.

They notice that the section of telephone data, tables, statistics, general information, etc., has been included as last year but has been greatly enlarged, and is much more valuable. It occupies over 40 pages, and is thoroughly indexed. Undoubtedly there is no publication containing more tables useful to the telephone man; there are several tables covering the properties of wire very fully, data on various types of construction, traffic, storage batteries, legal questions, a complete list of National and State associations and railroad commissions having jurisdiction over the telephone business. In fact, the book contains so much useful information that the readers will wonder how it all has been compressed into such a small space. It will straighten out many a question which comes up from time to time in any branch of telephone work. As soon as the book is received it will be worth while to go through it carefully, see what it contains and then put it in a handy place which will be a permanent location for the year.

Give Ear, Oh, Ye Telephone Men!

A week or two ago one of the hotel trade journals contained an advertisement for a head cook inserted by a Cincinnati restaurant man. He stated that he knew that his kitchen equipment was not modern, that many of the utensils needed replacing; that the help under this prospective head cook were not all that could be desired, but

what he wanted was a man to make good even if he had to cook in a tomato can, and for the man who could he would not only buy a whole new equipment, but would equip his pay envelope with more money.

Here is the proposition concisely put. What this restaurant man wanted was one *to make good* rather than to *make excuses.* He wanted to test him on the material at hand. Anybody can make good under perfect conditions, but it requires a real man to make good with imperfect conditions. Is it possible such a desire could ever arise in the telephone field?

Pity for Central Union Employes!

It is pretty near the limit when one of the piffle producers who disseminate "publicity" for the Central Union Telephone Co., that famous dividend passer of the Hoosier state, begins to shed crocodile tears for the employes of the Bell companies. Just listen to this:

"In fact, Mr. Vail declares that public control which does not go to the extent of interfering with the management or operation is not objectionable to the telephone companies. But it is more than probable that, in fixing the measure of control and the detail, the governing bodies will attempt to impose such restrictions and exactions as will cut off all the profits of the business, stop its further expansion and *reduce the incomes of employes.*"

Pretty soon we shall have some of these astute Central Union politicians joining the suffragette movement, and trying to line up their operators to bring to bear political influence on the commissions the Bell bosses seem so anxious to regulate. As commissions are non-commercial bodies the Central Union telephone people may feel that they are kin, and hence qualified to advise them. But where does the Central Union get its license to shed crocodile tears over the unfortunate prospects of the employes? It would be a mighty smart commission that could reduce the income of a Bell telephone employe. The next thing we know this same C. U. P. P. may be extending slobbery sympathy to minority stockholders.

The Intermediate Frame for Reducing Plant Investment.

When is the intermediate frame a profitable investment? Surely not in exchange where it is seldom used. But the fault lies not with the frame, but rather with the manager.

In many small and moderate sized common battery exchanges the proper use of the intermediate frame is far from being as well understood as it should be. We have even heard directors of telephone companies speak of the "intermediates" in a slighting manner, implying that they consider them a dead investment—something forced upon them by the manufacturer of their equipment because it seemed to be fashionable.

No idea could be farther from the truth.

The intermediate frame, properly used, enables a company to give better service, reduce operating costs, and even reduce the investment in switchboard, with the attendant annual charges due to maintenance and depreciation as well as interest on the investment.

The function of the intermediate frame is not merely to enable numbers to be changed when necessary; rather should it be considered as an instrument which makes it possible to distribute the load among the operators in such a way as to secure efficient and economical handling of traffic—completion of calls. The work on the intermediate frame is intimately connected with a study of the traffic, which can only be made by taking frequent test calls, and making peg counts once a month. With the information at hand in the peg counts, and the reports of the service tests, and a knowledge of the load which an operator can handle during the day and during the busy hour, it is easy to redistribute the lines among answering jacks in such a way as to provide a sufficient load for economical operating, considering the class of service which the exchange should give. It is a fact that an operator kept moderately busy is able to handle connections more promptly. Idleness causes an operator to become slack and inattentive. Less than 200 flat rate calls per position as a busy hour load in an exchange with no trunking means that the management is paying the salaries of too many operators. The remedy is a rearrangement of cross connections on the intermediate, to provide for a busy hour load sufficiently large for economy, but not so high as to overcrowd the operator. Where the chief operator has drilled the floor supervisors and operators in team work, a momentary overload on any one position can be very easily handled.

We are familiar with one case where the proper use of the intermediate enabled a company to reduce its operating force by some 40 per cent. The answering jacks at the positions which were rendered idle were cut back into the first positions, thus enabling the company to increase the load upon them. Nearly a third of the switchboard which had been in service was thus rendered idle. This abandoned part stood as a conclusive proof that the company had been losing money in the form of interest, maintenance, depreciation on this plant as well as in operating for several years, until an efficient traffic man readjusted the load by the switchboard changes and cross-connections at the intermediate making the grouping of working line answering jacks correspond to the real traffic requirements. The reduction in pay roll which this brought about was accompanied by an increase in salary for each operator retained, so that the girls were very glad to do the greater work for the increased compensation.

One prominent consulting traffic engineer has a very interesting lot of figures showing actual economies from the making of traffic studies and resultant use of intermediate, the totals running up into very attractive sums. Should the directors of companies who have not made a study of the possibilities of the intermediate ever see such figures. they would wake up very quickly. As a matter of fact, not even a storage battery is more essential to the proper operation of a common battery exchange than the intermediate frame, and when properly used it becomes the most profitable investment in the whole plant account.

Independents to Use Postal's Spokane-Seattle Line

Official Announcement is Made of Completion of Deal Whereby Interstate Consolidated System Secures Connection With Seattle, Portland and Tacoma Independent Lines via Newly Constructed Lines of Postal Telegraph Company

The Interstate Consolidated (Independent) Telephone Co., with headquarters at Spokane, Wash., has just closed a contract with the Postal Telegraph Co. by which the former secures the right to utilize the new lines of the telegraph company extending from Spokane to Seattle. These lines are of heavy copper and were built with a view to their employment for telephonic, as well as telegraphic, purposes.

The deal is of the first importance to the telephone users both of the Inland Empire and of the Pacific Coast. It will connect the newly opened plant of the Spokane Home with the Independent Telephone Co., of Seattle, adding to the connections of the Interstate Consolidated system over 450 cities and towns and upwards of 50,000 stations now forming a part of the Independent systems of Seattle, Portland and Tacoma.

The Interstate Consolidated is a holding company, of which Thaddeus S. Lane is president. Its properties include the Spokane Home; the Interstate Telephone Co., Ltd., a local and long distance property; the Montana Independent, of Butte, which covers the state of Montana with its long distance lines; the Great Falls Automatic, the Helena Automatic; the Billings Mutual; the State Telephone & Telegraph, of Bozeman; and the Idaho Independent, of Pocatello, which reaches all points in southern and central Idaho.

This tremendous field is now open to the coast cities via the new connection, and will now be able to reach the coast cities over Independent lines, where hitherto nothing but the Bell system has been available. The result will inevitably be to greatly stimulate and popularize the Independent service in both territories affected. Another effect will be the complete development of the field between the two cities, which has never had the benefit of comprehensive and up-to-date telephone service.

TELEPHONY recently printed the account of the completion of the new telegraph lines by the Postal company, construction of which was begun shortly after the announcement of the Bell-Western Union merger. Prior to that time the Postal had largely utilized the lines of the Rocky Mountain Bell in the Northwest. This connection has now been done away with in conformity with the policy of the Postal company to be entirely independent of Bell association since that corporation secured control of the Western Union, the Postal company's competitor in the telegraph field.

The new long distance arrangement was agreed upon for the respective concerns by E. J. Nally, vice-president and general manager of the Postal Telegraph; C. H. Judson, general manager Northwestern L. D. Tel Co., and Thaddeus expected by those familiar with conditions while the Postal line was in process of construction that a deal of this nature would ultimately be worked out, and the matter has undoubtedly been under consideration for some time although the official announcement of its consummation has just been made.

Mr. Lane made the following statement regarding the deal:

"We have completed arrangements with the Postal Telegraph Co. for an interchange of wire service. I have already signed the agreement and it has received confirmation from the Postal people.

"The agreement will do the following two things in the main: First, it will give to the Interstate Consolidated Telephone Co. the use of the 'talking' side of the Postal lines to the coast, including Tacoma, Seattle and Portland.

"Second, it will give the Postal Telegraph Co. the use of the telegraph side of the Independent lines throughout the states of Montana and Idaho. In addition we will string local circuits on the Postal's poles between Spokane and the coast."

The extension of the Spokane system is proceeding rapidly and new contracts are being written at a rate which is taxing the facilities of the company.

Program of Indiana Independent Telephone Association Indicates Successful Convention.

The official program for the sixth annual convention of the Indiana Independent Telephone Association has been prepared and is here summarized. The convention will be held at the Claypool Hotel, in Indianapolis, on May 10 and 11.

The first meeting will be called to order at 11 a. m., following the usual meetings of the executive and convention committees. An address of welcome will be made by Hon. Thomas R. Marshall, governor of Indiana, to which a response will be made by N. G. Hunter, president of the association.

The afternoon session will begin at 2 p. m., opening with the president's annual address, the reports of the secretary and treasurer, Walter J. Uhl, and of the various vice-presidents. Following this E. V. Hanes, general manager of the Toll Clearing Co., will talk on its advantages and benefits. The session will be completed by the appointment of committees and reports, and a general discussion.

The annual dinner will be given in the evening at 7:30, with Mr. Hunter as toastmaster.

Thursday's program is as follows:

MORNING SESSION 11:00 A. M.

Presentation of new business.

Address, "Public Utilities" Hon. James Garrard, Vincennes.

General discussion, open to all members, on the Independent telephone situation in Indiana, introduced by the president. Responses by: William Fortune, Indianapolis; Geo. W .Beers, Fort Wayne; Dr. J. E. Yarling, Peru; Sam. Tomlinson, Plymouth; A. J. Payton, Rockport; Thos. D. Sheerin, Covington; F. O. Cuppy, LaFayette;

PROPERTY OF UTAH INDEPENDENT TO BE SOLD AT AUCTION JUNE 5

SALT LAKE CITY, UTAH.—Announcement has been made by the directors of the Utah Independent Telephone Co. to the effect that the property of that corporation will be offered for sale at public auction on June 5.

H. F. Farwell, Terre Haute; Theodore Thorward, South Bend; Wm. M. Bailey, Richmond; W. A. Hough, Greenfield; W. F. Qualls, Greensburg; J. P. Goodrich, Winchester; Wm. L. Moellering, Fort Wayne; J. J. Brown, Danville.

Appeals and references.

Report of committees.

AFTERNOON SESSION. 2:00 p. m.

Miscellaneous business.

Election of officers.

Adjournment.

The entertainment committee is composed of: John A. Moriarity, chairman, Indianapolis; Wm. M. Bailey, Richmond; and W. F. Qualls, Greensburg.

The committee on reception registration includes John L. Hosea, chairman, Columbus; T. E. Hanway, Monticello; and F. O. Cuppy, LaFayette.

Missouri & Kansas Bell Restrained From Purchasing Independent Companies in Kansas.

Under the terms of a decree just handed down by Judge George H. Whitcomb, in the Second Division of the District Court at Topeka, Kans., the Missouri & Kansas (Bell) Telephone Co., may not acquire, either by purchase, lease, or otherwise, any property that would be unlawful for it to acquire under the new law relating to public utilities passed by the Legislature of 1911, prior to the publication of the new law. This decree takes the place of a former temporary injuction granted at the request of Attorney General Fred S. Jackson some time ago, and finally disposes of the case.

Suit was filed by Attorney General Jackson for the state last fall shortly after the Bell took over the Independent company in Wichita, asking that the defendant company be restrained temporarily from acquiring other Independent lines until the suit could be heard on its merits. The action was taken on account of rumors that the defendant company might absorb other Independent companies and the temporary injunction was granted.

A bill relating to public utilities and common carriers, and providing for a public utilities commission, prohibits the absorption of competitive concerns, and inasmuch as this law has been passed but has not been published, and therefore is not yet in effect, the District Court was asked to make the injunction permanent until the publication of the new law, after which it will not be necessary.

A journal entry in the case provides that the defendant company be "restrained until the publication of the Session Laws of 1911, from purchasing, leasing or acquiring any property which would be unlawful under the provisions of the act relating to the public utilities," etc. The state was represented by Attorney General John S. Dawson.

Los Angeles Home to Build New Exchange.

A. B. Cass, president of the Home (Independent) Telephone Co., of Los Angeles, Cal., has announced that the company will at once proceed to build and equip a new exchange in South Pasadena to care for its rapidly growing business in that section. The cost will be approximately $30,000.

The cables from Los Angeles to South Pasadena are now overloaded and, rather than lay out funds for new cable, it has been concluded to build the exchange. The site has already been secured on the east bank of the Arroyo Seco.

Ohio Bribery Charges of Interest to Telephone Men

Three State Senators and Two Representatives Indicted by Grand Jury for Soliciting Bribes—Other Indictments Pending—Not Known that Telephone Questions are Involved, but Situation is Significant in View of Previous Rumors Regarding Assembly's Attitude

In the light of the charges made in the Ohio Legislature last year in connection with the notorious Elson Bill, and the rumors that the telephone measures now pending in that body were being manipulated to suit certain interests and to the disadvantage of the public, the indictment of three Ohio senators and two representatives this week for soliciting bribes is significant.

The indictments were found by the Franklin county grand jury, which has been engaged in investigating alleged corruption in the Ohio Legislature, and it is expected that still more true bills will be returned against other members of the Assembly. The senators indicted are: Isaac E. Huffman, of Butler county; L. R. Andrews, of Lawrence county; and George K. Cetone, of Montgomery county. The representatives are Dr. George B. Nye, of Pike county, and A. C. Lowry, of Lawrence county. One indictment was returned against each, save in the case of Nye, against whom four indictments were returned.

Ohio business men, disgusted at frequent demands for money by certain legislators, are responsible for the investigation. They say it is impossible to get legislation without a resort to bribery. It even was declared in committee hearings a month ago that it was impossible to get honest bills through.

The public disclosure was precipitated by the arrest, upon the affidavit of Nye, of three detectives of the W. J. Burns agency, who have been secretly conducting the investigation. They were later released. It is said that they have obtained evidence which will lead to the filing of charges of accepting bribes against nineteen of the thirty-four members of the senate and against thirty of the 117 members of the house.

That the investigation of the alleged corruption will not develop into a farce similar to that played last year is assured by the refusal of Prosecuting Attorney Turner and Attorney General Hogan to permit any of the legislators to testify before the grand jury, and by the fact that no action is to be taken by a legislative investigating committee until after the grand jury has completed its work. This precludes immunity baths for any of the men involved in the present scandal.

To add to the terrors of the situation for the guilty men both the House and the Senate have passed bills this week making penitentiary sentences mandatory in bribery cases involving public officials.

While no information has been given out indicating that the telephone bills have been the subject of consideration thus far in the investigation, it is believed by those fully informed that no attempt will be made at this time either to pass the Yount Bill, which has been declared to be as unsavory as the Elson Bill of last year, or to emasculate and amend the Winters Utility Bill to a corresponding degree of undesirability. In fact, with this business-like investigation stirring up the situation and agitating the law makers, it is more than probable that no telephone legislation will be dealt with at all this session, or, if any measure does go through, the Winters bill, as the House amended it, will probably be the one.

Dallas, Amply Financed, Orders Equipment for 9,000 Lines

Contract Signed by Independent Company of Dallas Insures Early Completion of Big Exchange—Factory Already Working on Equipment for Initial Order—Amply Financed—Strong Local Syndicate Interested—Proper Building and Development of System Assured—Great Stimulus to Long Distance Development

The Independent Telephone Co., of Dallas, Texas, has signed a contract with the Automatic Electric Co., Chicago, Ill., covering equipment for 9,000 subscribers' lines. The contract provides for a complete central office installation, including distributing frame, power equipment, automatic switches, wire chief's desk, etc.

This contract follows the completion of financial arrangements which put into the hands of the company absolutely sufficient funds to guarantee the carrying out of its plans in a broad way and to the utmost advantage of the company. Interested in the Dallas Independent Telephone Co. is a local syndicate of fifteen men representing the best citizenship of Texas.

Not only has the proposition now been fully financed and contract for equipment placed, but a large amount of construction is already complete. The main building is all ready for the equipment, as will be recalled by readers of TELEPHONY who saw the reproduction of photographs printed at the time of the Texas convention, which was held in Dallas and gave the members an opportunity to inspect the new structure. One-third of the conduit is already in, and the balance of the work will be carried through rapidly.

The contract with the manufacturers provides for equipment to operate one main and four branch exchanges, to be ready for service June 1, 1912. This means quick work. Mr. H. D. Critchfield, of the Automatic Electric Co., assured TELEPHONY this week that the orders had been placed in the factory and men were at work on the equipment. Edmund Land is the engineer in charge of construction and is now on the job at Dallas. It is absolutely assured that the building of this exchange will henceforth proceed steadily and systematically.

Another movement which, in connection with the Dallas plant and the new exchange being built at Houston, means a great deal to the Independents of that state, is the progress on the telegraph system of the Mackay-Postal Telegraph Co., which seems to be arranging for extended co-operation with the Independent companies. It is understood that the Postal Telegraph Co. of Texas was occupying a joint pole line with the Southwestern Bell Telephone company at the time the American Telephone & Telegraph Co. took over the Western Union. The Postal company, which operates throughout the entire country and is controlled by the Mackay companies, is not to be handicapped by arrangements which formerly existed between the Postal Telegraph Company of Texas and the Bell lines, and, in fact, has material on the ground for its own line from Abilene, Kan., clear down and across the state of Texas. The new Postal line will pass through Oklahoma, touch Fort Worth, Waco, and pass on to Houston, Galveston, Port Arthur, Brownsville and Beaumont. It is expected that the line will be completed this summer, and that in the development of connections the Postal company will lease space to or from Independent companies, and, in fact, will work with them in a broad way for mutual profit and development.

There is no question but that the Dallas plant will enter into some arrangement with the Postal which will, incidentally, secure to the Dallas Independent subscribers a long distance outlet for long haul business. In regard to short haul business the future of the Dallas plant is assured, as within 100 miles of Dallas there are already one-third more Independent subscribers than Bell, and development in this territory will proceed very rapidly.

Eastern Illinois Association Adopts Toll Line Contract and Endorses Clearing House.

The Eastern Illinois Telephone Association recently held a regular session at Newton, Ill., which was marked by a gratifying attendance and a keen interest in all the proceedings. Probably the most important thing accomplished was the adoption of a toll line contract, and the inauguration of a clearing house. Several shares of stock in the latter were taken up at the meeting. John W. Coffee, of the Indiana Clearing House, was present and explained the plan thoroughly. TELEPHONY expects to be able to present the main points of the toll line contract in an early issue.

Manford Savage, president of the National association, gave a strong talk on the situation in general and enlarged upon the benefits of membership in the National body. He pointed out what he believes to be the present trend of opinion among Independent operators as to just what companies should be considered Independent, speaking, in part, as follows:

> As in any other business, success in the operation of an Independent telephone plant depends largely upon the energy and ability of those in charge. However, there is no business in which co-operation is so absolutely essential.
>
> The beginning of the Independent telephone movement was to a very large degree a reformation and, like most reformers, those who engaged in it had to undergo persecution in various forms. The result of this treatment, naturally, in view of the ability and character of the opposition, was to make us define, a little severely if you please, the qualifications of those to be admitted to the Independent church. The one principle to be adhered to as strictly orthodox was that there should be no entangling alliances in any shape or form with the enemy, in fact every proposed member should be unspotted by any contact.
>
> That this orthodox position was necessary at the outset can not be denied. However, nothing stands still. We became stronger, our subscribers multiplied and our lines extended. We soon found that we had taken on the character of public utility concerns; that, the sender, being willing to pay for the transmission of the message, had a right to insist that the receiving company make such connections as would insure the delivery of the message at its destination. This condition arose out of the inevitable law of growth, and compels us to recognize the fact that the cast iron rule of othodoxy must be modified and liberalized to the extent that it will permit the admission to membership of all who are not controlled by the Bell company and who, while operating as Independent companies and who are at heart true to the principles of Independent telephony, yet are forced by local conditions to have more or less Bell connections.
>
> The trend of opinion among Independent telephone men is towards thus liberalizing our requirements for membership in state and the national associations. And when the letter of the law has thus been changed so that those who are with us in spirit are invited to assist in this work of co-operation so necessary to our business I feel very sure that there is no section of Illinois that will have a larger representation in both the state and national associations than the territory covered by the Southeastern Illinois Association.

The next meeting of the association will be held at Marshall, Ill., on June 21, 1911.

The Inter-State Telephone Company

A Story of the Chicago Independent Telephone Belt—Some Queer Financial Doings—A Property of Great Vitality

By J. C. Kelsey

The *Will County Advertiser*—$1.00 per year.
Did you ever hear of it?

When the great Chicago Sanitary Canal was in process of construction, sixteen years ago, there was an Independent telephone company at Lockport, Illinois.

It was the Peoples' Telephone Co., owned and operated by E. G. Hawley, editor, telephone man and orator.

E. G. Hawley is the immediate ancestor of the Inter-State Telephone Co.

Mr. Hawley wanted a solicitor. He hired E. R. Conklin.

Naturally, the spirit of conquest suggested an exchange at Joliet.

The Peoples' Telephone Co. needed Joliet connection.

E. R. Conklin secured a franchise.

They organized the Northwestern Telephone Co.

They built Aurora and Elgin and grew to $500,000 proportions.

November 1, 1901, the Inter-State Telephone Co., succeeded to the property of the Northwestern Telephone Co.

The merger was conceived for toll line advantages.

The following men took part:

S. H. Case, Ben. Block, H. H. Evans, M. S. Sargent, A. B. Conklin, Dan Hill, B. G. Richmond, J. P. Steffins, H. D. Wayne, A. J. Miller, W. T. Campbell, C. F. Stotzer, Max Aarens, H. H. Salisbury, E. J. Clapp, J. D. Lapp, Frank Tracy, H. Knowles, M. Slusser, E. J. Miller.

This reminds me of Wauseon—some of these men lived there.

A little city in Ohio, but apparently the birthplace of Independent telephone investors.

Apparently there have been few telephone deals that have missed Wauseon.

Strange to say, it was the Wauseon crowd which later came back to buy bonds and stocks and deliver to the Bell crowd.

Considerable history might be written about Wauseon's contribution to telephone complexities.

Anyway, the men behind the Inter-State had great ambitions.

It was to be the greatest telephone system ever built.

You can realize that from its name!

Three men actually took command—Evans-Case-Conklin.

Three ambitious magnates.

The whole earth had no terrors for them!

It is alleged that they made contracts with themselves.

They organized the Conklin Construction Co.

You can see trouble brewing already.

They acquired the Du Page County Telephone Co.

Also the Whiteside County Telephone Co.

This happened to be a Wauseon property, too.

They acquired Sterling and Morrison.

They built copper lines to Springfield and Peoria.

And built good exchanges there.

The year 1907 found the three trustees, Conklin, Case and Evans, in the zenith of their power and glory.

They interested the Investment Registry, Ltd., of London.

E. R. Conklin was the authorized agent of the Inter-State company and had power of attorney.

The Englishmen agreed to put in $2,500,000 at the rate of $250,000 yearly.

Note the gigantic opportunity offered.

The Englishmen, instead of buying treasury bonds, found out that they had put $250,000 into the personally-owned bonds of Conklin, Evans and Case.

There was trouble!

The Englishmen agreed to carry out their contract, if Messrs. Dolph and Wagner, the committee, would assure the return of the $250,000 to the treasury.

Matters drifted along.

The money could not be restored, and the Englishmen sent no more.

Later Mr. Dolph originated another plan, to issue $800,000 in priority notes to develop and extend the property.

Everyone apparently agreed.

Everything looked rosy—until it was discovered that Evans had scratched his name from the agreement.

Something was wrong!

Wauseon was buying bonds and stocks to deliver the company to the Bell.

The $800,000 priority note scheme went glimmering.

In 1910, the stockholders met at Jersey City.

Evans thought he had control.

To his surprise, he had not—

He lost the presidency of the company.

Mr. Wagner was elected president and apparently Bell control defeated.

But we are safe in saying that the Bell company did not own a single share.

Please note that they do not own a single share of stock today!

They had a chance, but did not care to take advantage of it.

The Inter-State Telephone Co., is as real an Independent telephone company as any in the United States.

Anyway, the following officers were elected:

H. D. Wagner, president; E. F. Lawrence, vice-president; A. T. Matthewson, treasurer; Evan Clough, secretary.

Bond interest was due October 1, 1910.

The money was on hand.
The directors voted to pay it.
President Wagner went to the bank to see about it.
He found the treasury empty!

Evans as president had used the money before he stepped out.

He paid off construction company notes and took care of his personal accounts.

The Inter-State company was broke.
Interest was due—hence the receivership!

Truly a remarkable story!

Judge Kohlsaat then appointed the receivers.
Not only receivers, but they can properly be called conservators.

The judge plainly instructed the receivers of this property that they were dealing with an unusual case—that they were to conserve.

Looking over this remarkable property, we find the following physical conditions:

	Subscribers.		Subscribers.
Peoria	2,652		
Springfield	2,550	Batavia	280
Aurora	2,311	Coleta	242
Joliet	1,750	Elwood	239
Sterling	1,075	Orland	186
Elgin	863	Dundee	173
Wilmington	560	Plato Center	170
Plainfield	540	Prophetstown	156
Naperville	516	Sugar Grove	144
Peotone	458	Big Rock	131
Morrison	419	Mokena	122
Elburn	403	Kaneville	122
Hampshire	386	Geneva	32
Frankfort	345	Scattering	322
Crete	338		
Lockport	330	Total	17,855

The right of way owned by the company is:

Local toll	463	miles
Farm	712	"
Long distance	392	"
Total pole mileage	1,567	"

Circuit Mileage:
Local toll
227 copper mile circuits.
876 iron mile circuits.
Long distance
761 copper mile circuits.

This company reaches from Indiana clear across Illinois to Iowa. It extends south from Chicago to Springfield and Peoria.
It surrounds Chicago as a belt line.

The company operates in the following counties:
Kane, Cook, Lee, Livingston, Macon, Grundy, Kankakee, De Kalb, De Witt, Du Page, McLean, McHenry, Peoria, Sangamon, Whiteside, Will, Kendall, Tazewell.

These counties are the best counties on the globe. No land has higher "value" or is more productive. It's no wonder that this company survived its ill treatment.

You have noticed how the Bell company talks of its immense advantage—connecting companies.

The Inter-State has contracts with the following:
Illinois Tunnel Co. (Chicago).
Albany Telephone Co.
Auburn Telephone Co.
Automatic Home Telephone Co.
Bloomington Clearing House.
Boynton Telephone Co.
Bureau Telephone Co.
Byron Telephone Co.
Canton Telephone Co.
Carroll County Telephone Co.
Christian County Telephone Co.
Citizens Telephone Co.
Cramer Telephone Co.
Crescent Telephone Co.
Decatur Telephone Co.
Decatur Home Telephone Co.
De Kalb Telephone Co.
Dixon Home Telephone Co.
Eastern Ill. Telephone Co.
El Paso Telephone Co.
Galesburg Union Telephone Co.
Green River Valley Telephone Co.
H. D. Wagner Toll Line.
Hanna City Switchboard Telephone Co.
Illinois Tunnel Co.
Illiopolis Telephone Co.
Kinloch Bloomington Telephone Co.
Kinloch Long Distance Telephone Co.
McHenry County Telephone Co.
Manhattan Telephone Co.
Mt. Auburn Telephone Co.
National Telephone Co.
Northern Illinois Telephone Co.
Ogle Co. Telephone Co.
Peoples Telephone Co.
Petersburg Telephone Co.
Rochester Telephone Co.
Rockford Home Telephone Co.
Sangamon Telephone Co.
Shield Toll Line Tel. Co.
Streator Independent Tel. & Telg. Co.
Tri City Telephone Co.
Trivoli Independent Tel. Co.
Williamsville Sherman Telephone Co.

The Inter-State connects with:
1,234 Illinois cities.
103 Indiana cities.
447 Iowa cities.
456 Missouri cities.

The financial performance of the Inter-State Telephone Co. averages as follows:

AVERAGE QUARTERLY EARNINGS.

Rentals	$78,175
Toll	16,500
Miscellaneous	3,975
Total income	$98,650
Quarterly cost, including current reconstruction	50,025
Net for interest reconstruction, etc.	$48,625
Interest	29,163
Net for reconstruction, etc.	$19,462

On a yearly basis, the Inter-State performance is:

Income	$394,600
Cost	200,100
Net for interest	$194,500
Interest	116,652
Net for reconstruction, etc.	$ 77,848

On a station basis, the Inter-State company performs:

Rentals	$18.00
Tolls	4.00
Miscellaneous income	.55
Total	$22.55
Cost	11.45
Net for interest	$11.10
Interest	6.67
Net for depreciation, etc.	$ 4.43

Operating percentage, 50 per cent.

Can you see any earthly reason why such a company should have any trouble?

It earns decently.

It pays $11.45 toward operation, current maintenance and current depreciation. A liberal account, too.

It pays interest easily and leaves $4.43 for the depreciation expense.

This is high too.

Bell depreciation hardly reaches $4.

Can't you imagine that when the Chicago connection is completed, toll receipts will easily rise to an average of $6 per station?

This will add $35,000 to the annual gross earning.

By reason of Chicago connection, the rental list will be strengthened.

And the class of service will be automatically increased in value.

The subscribers of the Inter-State Telephone Co. get telephone service for five cents a day.

They are satisfied with the service, too.

In spite of trouble and broken promises, these 17,500 subscribers have stayed manfully by the Inter-State company.

And are paying it nearly $400,000 a year for service.

Did you know that such a really powerful company was so close to Chicago?

Inter-State subscribers pay for service as follows:

725	pay	$3.33	per	month
710	"	3.00	"	"
1,218	"	2.50	"	"
1,439	"	2.00	"	"
3,924	"	1.50	"	"
6,425	"	1.00	"	"

That is a reasonable charge.

Yet the Bell would starve to death on it.

What a monument to the fundamental strength of telephone enterprises!

Do you know that this company has, without fail, paid interest of 5 per cent on $2,390,000 worth of bonds?

That it paid 3½ per cent on an equivalent amount of stock up to 1907?

And that the Evans-Conklin-Case crowd are being sued for the return of $1,230,000 to the company's treasury?

And today the physical condition of that company is fair.

Never was there a more wonderful career of a telephone company.

It shows a fundamental strength that proves telephone securities to have no superior.

Today, the receivers are paying interest, without interruption, and not a man will lose a single dollar.

This receivership shows what square management can do.

Chicago connections will give this company a new incentive to go on and get its deserved share of business.

Think of the opportunities of 1907!

Had the Englishmen's money been properly handled, what this company could have been today with $250,000 new money every year!

Today it would be one of the best companies in existence.

The English syndicate made a good investment.

But it was spoiled by selfishness.

Rest content, Mr. Independent Telephone Man!

Chicago will have telephone connections, so that future quarrels with the Chicago Telephone Co. over poor transmission will be missing.

Chicago citizens will then have a chance to learn something.

Strange that you find all the telephone ignorance in Chicago and New York.

Nothing has ever happened to give Independent telephone interests such a boost as the deal between the Inter-State Telephone Co., and the Illinois Tunnel Co.

In talking of Inter-State affairs, I feel no shame about mentioning receivers.

As a rule, a receivership means ruin.

But in this case it means success!

Did you ever hear of a receivership before that worked no hardships on the security holders?

Mr. Dolph has long been interested in the company's affairs, together with Mr. Wagner and Mr. Clow—you know the battle-scarred and steadfast men of the Inter-State Telephone company.

The company has always given excellent service.

Very soon will a great property come into its own.

MORAL: Merit can not be downed.

Bell to Resist Rochester Injunction Suit.

It is apparent that the New York (Bell) Telephone Co. does not propose to allow the temporary injunction secured by the Federal Independent, of Buffalo, to become permanent through failure to answer. The injunction was secured to prevent the turning over of the Rochester Telephone Co., to the Bell interests. Twenty days were allowed for answers by the various defendants named, and attorneys for these defendants state that answers will be duly filed within the limit set. That of George R. Fuller, president of the Rochester company, has already been filed with the court, and the others are to follow.

THE CHICAGO DAILY TRIBUNE: TUESDAY, MAY 2, 1911.

Most Important Telephone Announcement

In Chicago's History

The Illinois Tunnel Company has just completed arrangements to connect the independent telephone users in the territory tributary to Chicago with its automatic telephone system in this city. This assures a city-wide automatic telephone service—17,000 telephones being already installed and more than 20,000 will be in service by June 1st of this year. This is the quickest initial installation of this number of telephones ever made.

The conduit work is already completed with facilities to accommodate one hundred and fifty thousand subscribers and Chicago will ultimately have five hundred thousand automatic telephones.

Automatic telephones mean vastly superior service at much lower cost; unlimited number of calls and elimination of all troubles incident to the manual operation of a telephone system.

Flat rate, unlimited automatic service, means all the calls which can be put over a telephone circuit without increasing the cost either to the subscriber or the company.

Restricted or measured service costs the user additional money every time a call is made.

With our unlimited automatic service the cost does not increase with the number of calls.

Automatic telephony is a radical improvement in the telephone art.

The perfection of a faultless machine which dispenses with the human operator, has made possible a telephone service which costs no more to the user and no more to furnish by the company, for an unlimited number of calls than it does for one call.

The people of Chicago are each year paying millions of dollars more for telephone service manually operated, than they will be required to pay for a vastly superior service, automatically operated.

With this service you are not penalized for getting the maximum benefit from the use of your telephone.

The automatic telephone means greater efficiency than can possibly be had by the old manual method.

It means the elimination of delays; wrong connections; disconnects during conversation. Think how often these and other annoyances occur to you and what a relief it will be to be free from them.

Automatic telephone service is equally efficient days, nights, Sundays and holidays.

If you are a present or prospective telephone user, if you have suffered from inefficient telephone service, interest yourself in the Automatic.

The saving in time, money, annoyances, temper, wear and tear of human nerves is enormous.

Twenty-Five Thousand Dollars in Prizes

Every Man, Woman, Boy and Girl in Chicago Is Invited to Participate

We want you to familiarize yourself with this proposition and carry the news into every home and place of business in the city and are ready to pay you liberally for so doing.

We will, subject to the conditions below, pay to the persons securing service contracts the following prizes and compensation:

To the person securing the LARGEST number of service contracts on or before July 1, 1911 - - first prize, ONE THOUSAND DOLLARS

To the person securing the NEXT LARGEST number of service contracts on or before July 1, 1911 - second prize, FIVE HUNDRED DOLLARS

To the FOUR persons securing the four next largest number of service contracts on or before July 1, 1911 - TWO HUNDRED AND FIFTY DOLLARS, EACH

To the SIX persons securing the next largest number of service contracts on or before July 1, 1911 - ONE HUNDRED DOLLARS, EACH

To the TWENTY persons securing the next largest number of service contracts on or before July 1, 1911 - - - - FIFTY DOLLARS, EACH

To the THIRTY-SIX persons securing the next largest number of service contracts on or before July 1, 1911, TWENTY-FIVE DOLLARS, EACH

To the ONE HUNDRED persons securing the next largest number of service contracts on or before July 1, 1911 - - TEN DOLLARS, EACH

In addition to the foregoing, and subject to the conditions hereof, we will pay FIFTY CENTS for each service contract, regardless of whether or not you are one of the prize winners. All contracts taken hereunder, in order to be counted, shall be signed by a responsible party and accepted by us. This proposition is open to and includes all business contracted in accordance herewith and the printed instructions to be furnished on application at our offices up to and including July 1, 1911. Everybody is eligible to accept this offer except employes of the Subway Telephone Construction Company and the Illinois Tunnel Company.

GENERAL CONDITIONS: Certificate of authority to solicit, subscription blanks, general information concerning service and other details, will be furnished on application at the Contest Bureau.

Apply immediately at S. W. corner 6th Bureau and Market Sts. Automatic Telephone No. 52-121.

Subway Telephone Construction Company

Initial advertisement of Subway Telephone Construction Co., following announcement of signing contract with Inter-State company—This occupied a full page in each of the leading Chicago daily papers—It is being followed by smaller display advertisements emphasizing the same points and keeping interest in the contest at a high pitch. The plan met with instant response.

Missouri Tax Hearings, May 24, at Jefferson City.

The State Board of Equalization of Missouri will hear representatives of telephone companies with reference to 1911 tax assessments at Jefferson City on March 24. County officials and all other citizens who may be interested in the assessment of telegraph and telephone property, or who have information in regard thereto, have been requested to appear.

Buys Assets of Telephone, Telegraph & Cable Co.

The assets of the Telephone, Telegraph & Cable Co. of America have been sold at public offering to Henry S. Kearny, of New York, a heavy stockholder, for $75,000.

St. Louis and Cleveland Suits Dismissed.

The attorneys for the plaintiffs in the suits filed in the fall of 1909 to prevent the Bell telephone interests from obtaining control of the United States long distance company and the Cuyahoga Telephone Co., of Cleveland, have caused the dismissal of both actions.

Montreal After Lower Telephone Rates.

It is expected that the Railway Commission will meet at Montreal about May 20 to hear the application of that city to compel the Bell Telephone Company of Canada to reduce its rates for service.

Ring out the old, ring in the new;
Ring mourning bells across the snow.

The Blue Bell's going; let him go.
Ring out the false, ring in the true.

—A long way after Tennyson.

Minnesota Central Bell Closes Year with Big Deficit

Annual Report of Company Managed by Officers of Northwestern Bell Shows Deficit of Over $28,000 for Year 1910, Operating Costs Which Consume More than 93 per Cent of Gross, and Total Deficit of $126,000—Outstanding Liabilities Far Plant Value

It is a rare occurrence for the Bell telephone interests to issue any kind of financial statement when conditions do not warrant the printing of a favorable one. The slip occurs, however, once in a long time, and it has now happened in Minnesota. The annual statement for 1910 of the Minnesota Central Telephone Co., with headquarters at Wilmar, has been made public, and a most interesting document it is.

In considering the results here shown, it must be borne in mind that C. P. Wainman, president of the company, is vice-president of the Northwestern (Bell) Telephone Exchange Co., of Minneapolis; that C. E. Yost, a director, is general manager of the Northwestern; and that J. W. Christie, the treasurer, is treasurer of the Northwestern. The Bell owns a controlling interest in the Minnesota Central, and the methods employed by the Bell officials in its management may fairly be assumed to be those employed by the larger company.

This report shows how successful those methods have been and how fortunate the minority stockholders may consider themselves. It shows that the Minnesota Central closed its year with a deficit of $28,286.41 in its earnings, and that its balance sheet, as of December 31, 1911, showed an additional deficit of $97,850. The accumulated deficit, therefore, which has been piling up for a most discouraging length of time, aggregated at the close of last year over $126,000. This is an amount considerably in excess of the entire gross revenue of the company last year.

It is also of interest to note that the Minnesota Central spent over 93 per cent of its gross income in 1911 for operating expenses. The average Independent operating expense is approximately 50 per cent of gross.

The complete statement of earnings and expenses, as rendered the stockholders, is as follows:

REVENUE ACCOUNT.
Year Ended December 31, 1910.

		Increase over 1910
INCOME.		
Exchange service	$41,459.01	
Toll service	58,083.06	
Sundry earnings	206.78	
	$99,748.85	*$700.93
EXPENSES.		
General	$ 9,740.59	
Operating	40,491.12	
Maintenance	38,000.17	
Rentals	1,439.16	
Insurance	198.45	
Taxes	3,038.21	
	$92,907.70	*25,484.39
Total net earnings	6,841.15	$24,783.46
Interest	35,127.56	2,747.64
Deficit	$28,286.41	$22,035.82

*Decrease.

The balance sheet shows, besides the impairment of the capital by the deficit of $126,000, noted above, that the floating debt almost equals the outstanding capital stock; that the aggregate stock, bonds and floating debt—securities outstanding—is $1,119,459, as against a plant valued on the company's own books at but $980,882; and that for this plant, claimed to be worth approximately a million dollars, the only depreciation reserve is less than $20,000.

The balance sheet, as of December 31, 1910, is as follows:

BALANCE SHEET.
As of December 31, 1910.

ASSETS.		
Construction	$972,736.37	
Real estate	8,146.60	
		$980,882.97
Office furniture and fixtures		1,935.95
Supplies		13,514.17
Tools and vehicles		1,199.62
Bills and accts. receivable		9,170.10
Cash		6,184.64
Total assets		$1,012,887.45
LIABILITIES.		
Capital stock issued	$485,450.00	
Surplus	*97,850.16	
Undivided profits	*28,286.41	
Total		$359,313.43
Bonded debt		161,000.00
Reserves (obligations)		5,883.63
Bills payable		462,119.85
Accounts payable		5,007.61
Total payable		$634,011.09
Replacement reserves		19,562.93
Total liabilities		$1,012,887.45

*Deficit.

Besides this rather cloudy financial statement, there are also figures showing the physical growth of the property. No "connecting exchanges" were added during the year. These are presumably the companies which use the Minnesota Central's toll lines. Apparently no growth is being made along those lines. One exchange was added to the company's own system and 160 new stations were added. These last, however, were acquired at alarming cost, 1,026 having been connected and 866 disconnected.

E. E. Baker, general manager of the company, in making his report says: "It is with much disappointment that I am unable to present a more satisfactory report, but I feel sure that everything possible has been done by our district and local managers to increase the business during the year."

This comforting observation and conclusion are supplemented by remarks from Mr. Wainman which are equally comforting to the minority stockholder, who has doubtless entertained at one time or another vague hopes of dividends. "The business of the past year," says Mr. Wainman, "while showing a less deficit than for the year 1909, is still unsatisfactory, and it is very much feared that until there is a general increase of business throughout the territory in which this company operates, there is little probability of much improvement.

"Expenses have been reduced to the very lowest possible figure," Mr. Wainman continues, quite oblivious of the fact that

his company is spending more than 93 per cent of its gross revenue for operating costs, "and every effort made to increase the amount of revenue. It was thought probable that, by a very general reduction in the toll line rates inaugurated several months ago, the revenue might be largely increased, but while there was an increase in the amount of business the increase in the receipts was not material."

In conclusion Mr. Wainman adds: "The reports of the general manager and of the auditor attached will give you a very complete understanding of the present situation." And with this barren and lame *finale* the minority stockholders must needs content themselves, for there is no recourse open to them, except it be to throw the concern in the hands of a receiver and oust the management which has allowed such a condition to obtain.

Court Holds Rates Fixed by Louisville Ordinance to Be Confiscatory—Case to Be Appealed.

Judge Walter Evans of the Federal Court has issued a permanent injunction restraining the city of Louisville from putting into effect its ordinance regulating the rates of the Cumberland (Bell) Telephone & Telegraph Co. The company's defense was that the rates were confiscatory, and this view was upheld by Judge Evans. The city has announced that it will appeal the case.

The ordinance which has been the subject of litigation was passed over two years ago. It fixed maximum rates as follows: Business telephones, $5.50 a month; party lines, $4; residence lines, $3; party lines, $2. These rates accord with those fixed in the franchise of the Louisville Home Telephone Co. and are about 30 per cent lower than the charges now being made by the Cumberland.

Henry Burnett was appointed master in the case, and he made a lengthy investigation. His findings were that the city's contention was reasonable and that the rates would enable the Cumberland company to earn a fair return upon its investment. Judge Evans, however, says that with due allowance made for depreciation, the company is making only 7 per cent now.

C. H. Judson Manager Northwestern Long Distance.

A short time ago the receiver of the Northwestern Long Distance Telephone Co., of Tacoma, Washington, relinquished his control of the company. The company is entirely solvent, and is reported to be in a prosperous condition. The receiver had been appointed to rearrange its securities. The system operates from Central Western Oregon to Port Angeles on the straits of Juan De Fuca, constituting over 400 miles of pole line. It has about 100 stations on its own lines, and there are 498 stations on all lines in its territory.

Mr. C. H. Judson, of Seattle, has been made general manager of the company, and is in full charge of its affairs.

Another Exchange Junked by the Bell.

An item in the Norfolk, Va., Dispatch reads as follows: "The mortal remains of the Southern States Telephone Co., of Norfolk, which corporation was absorbed by the Southern Bell Telephone Company recently have been shipped to Baltimore. The telephones, switchboard and attachments were loaded aboard the schooner Levi B. Phillips, Captain Tyler, commanding, constituting an extremely queer cargo, and it is assumed are to be sold as junk."

Home Company to Install System in South Pasadena.

The Home Telephone Co. of Los Angeles will erect a telephone system in South Pasadena, Cal. this spring, at a cost of approximately $30,000. The present system is very much overcrowded, and as over 300 contracts for service are in the hands of the company, this move was made vitally necessary.

Warren & Niles (Independent) Telephone Co., Warren, Ohio, Makes Public Annual Statement.

The Warren & Niles (Independent) Telephone Co., with headquarters at Warren, Ohio, has issued its report for the year ended December 31, 1910. The revenue account is as follows:

REVENUE ACCOUNT.
Year Ended December 31, 1910.

RECEIPTS.

Gross receipts, rentals, tolls, etc.	$40,187.25
Less amt. due U. S. Tel. Co.(December estimated)	3,514.30
	$36,672.95

EXPENSES.

Operating expense	$18,382.02
Taxes	2,020.45
Bond Interest	1,537.50
Loan Interest	293.34
Rent Exchanges	506.00
Paid Account Maintenance	5,126.20
Total	$27,865.51
Net earnings	8,807.44

The statement of station growth is as follows:

Telephones December 31, 1910	2,365
Telephones December 31, 1909	2,229
Net gain in 1910	136
Telephones of Phalanx & Leavittsburg Company	119
Total of Warren & Niles Company, Dec. 31, 1910	2,484

BALANCE SHEET.
As of December 31, 1910.

ASSETS.

Cost of plant Dec. 31, 1909	$170,455.71
Real estate	8,275.07
The Phalanx Telephone Company purchased 1910	5,000.00
New construction 1910	3,331.95
Maintenance paid 1910	5,126.20
Cost of plant Dec. 31, 1910	$192,188.93
Supplies, tools and office furniture	2,000.00
Total	$194,188.93

LIABILITIES.

Capital stock	$103,200.00
Bonds outstanding	31,000.00
Bills payable	6,400.00
Accounts payable	2,615.88
Depreciation reserve	46,192.00
Surplus	4,781.05
	$194,188.93

The report states that the subscribers of the Warren & Niles Telephone Co. have direct service with the subscribers of the Phalanx & Leavittsburg Telephone Co. and the Champion Telephone Co., making the total number of telephones on the Warren and Niles system and connections about 2535.

The company is now installing a North Electric Co. Auto-manual system in its new Park avenue building in Warren, which when completed, will give it one of the most modern and best equipped exchanges in the state of Ohio.

The Warren & Niles company pays annual dividends at the rate of 5 per cent. The officers and directors are: President, Washington Hyde; vice-president, Jules Vautrot, Jr.; secretary, J. J. McClean; general manager, E. G. Miller; M. S. Clapp, C. C. Clawson.

Comparative Costs of Handling Telephone Traffic

Conclusion of Abstract of a Paper on "Telephone Traffic" Presented at the Los Angeles Convention of the American Institute of Electrical Engineers, April 25-28, 1911.—A comparison of Traffic Cost for Manual and Automanual Systems by the Inventor of the Latter.

By Edward E. Clement

In order to arrive at a true comparison of the actual labor required of the manual and automanual operator in handling a call, the following analytical tables have been prepared, giving a unit energy value to each of the different movements required of each operator and assigning that value in accordance with the judgment of traffic experts.

Table of Comparative Work Units Based on Number of Movements of an "A" Operator in Handling a Local Call

		Manual	Auto manual
1.	Operator to note line signal	10	3
2.	" " insert answering plug	50	0
3.	" " open key and say "number"	30	5
4.	" " pick up calling plug	30	0
5.	" " reach for and test multiple	75	0
6.	" " insert calling plug	50	0
7.	" " close key	25	0
8.	" " set up number	0	25
9.	" " ring called party	15	0
10.	" " press starting button	0	5
11.	" " observe disconnect signal	10	0
12.	" " disconnect both cords	75	0
	Total	370	38
	Extra Movement of "A" Operator in Handling a "B" Call		
13.	Operator to depress order wire button	15	0
14.	" " ask for trunk assignment	30	0
15.	" " depress branch exchange button	0	5
	Total	45	5
	Movement of "B" Operator in Handling a Call		
16.	Receiving order for trunk and assigning same	15	0
17.	Observing and assigning idle trunk	15	0
18.	Pick up trunk assigned and reach for multiple	100	0
19.	Test multiple jack	10	0
20.	Insert plug in multiple jack	50	0
21.	Ring called party	10	0
22.	Observe disconnect signal	10	0
23.	Take down trunk	50	0
	Total	260	0
	Grand total	675	43

It will be noted that in the handling of a purely local call the manual operator is represented in 370 work units as against 38 work units for the automanual operator while in the handling of a trunked call the manual operator is represented in 675 work units against 43 for the automanual operator.

In addition to the foregoing comparison of mental and muscular effort, it is possible to represent in foot-pounds the work done in lifting the plugs, cords, and weights, overcoming the friction of the cords against their associated plug seat walls. In one thousand completed connections and disconnections about 2,917 ft-lb. of energy are expended by the manual operator that are not required and are not expended in the corresponding work of the automanual operator. The manual operator may average 250 calls per hour, but the automanual operator easily handles 1,000 calls per hour, so that a saving of 2,917 ft-lb. per hour must be credited to the automanual system. This is presented as evidence that my purpose of relieving the operator of all unnecessary work is fully accomplished. I believe this saving is translated directly into terms of higher efficiency, not only increasing the number of calls handled, but cutting down the percentage of error by the lack of strain on the operator.

The following tables represent three sets of service tests made on a commercial automanual switchboard under actual operating conditions. Each test represents the total time consumed by the operator in observing the call, depressing the listening key, pronouncing the word "number," repeating the numeral as it is given, setting up the same on the key set, and finally depressing the starting key. It should be particularly noted that this is total time per operator call, and not merely answering time, which is what the manual companies usually give. Comparison on this basis eliminates all uncertainties due to delays, which should be included in order to give a fair comparison under service conditions, and makes the results thoroughly practical.

First 100 Records.

Longest individual period	12.40 sec.
Average five longest individual period	7.44 "
" ten " " "	6.34 "
Shortest " " "	1.60 "
" five " " "	1.92 "
" ten " " "	1.96 "
" entire 100 records " "	3.396 "
Hourly rate at which calls were being handled	1060

Second 100 Records.

Longest individual period	7.60 sec.
Average five longest individual period	5.52 "
" ten " " "	5.34 "
Shortest " " "	2.00 "
" five " " "	2.04 "
" ten " " "	2.18 "
" entire 100 records " "	3.374 "
Hourly rate at which calls were being handled	1067

Third 100 Records.

Longest individual period	5.40 sec.
Average five longest individual period	5.32 "
" ten " " "	4.44 "
Shortest " " "	1.60 "
" five " " "	1.65 "
" ten " " "	1.80 "
" entire 100 records	3.16 "
Hourly rate at which calls were being handled	1139

The first and second records were made by the same operator, and the third record by another, but neither of the operators knew that the record was being made.

These are not selected records but are all of the records made on the same day and all represent actual calls.

Comparison of Manual and Automanual Operating Force.

A comparison between a manual and an automanual operating force in handling a traffic load is shown in Fig. 10. This traffic load represents 4,162 working lines connected with a main and a branch exchange located in a western city. About 21 per cent. of all calls (flat rate) are trunked. The calls handled during the busy hour in both exchanges average about 185 per manual operator.

The Manual Force
- 2 chief operators
- 1 information operator
- 5 supervisors
- 3 relief operators
- 50 operators.

61 employes

The Automanual Force
- 2 chief operators
- 1 relief operator
- 11 operators

14 employes

It will be noted that the manual "B" or trunk operators and the trunk calls are omitted from this chart. The automanual makes its greatest saving where branch exchanges are employed; the heavier the trunking, the greater the saving with automanual, because it eliminates trunk operators. Notwithstanding that the chart deals only with "A" operators, a reduction in employes in favor of automanual amounting to 77 per cent. is nevertheless effected.

Comparative Cost in Handling Manual Traffic.

No plan is known to me that has been utilized heretofore between manual operating companies in comparing their

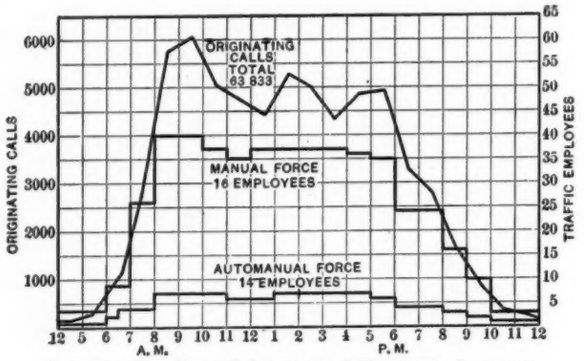


Fig. 10. Relation of Number of Employes to Load.

costs of handling traffic. The factors which seem to have precluded such comparison are:

1. Variation in salaries.
2. Variation in trunking percentages.
3. Variation in calling rate per hour.

The only basis used for calculating traffic costs has been:

Cost of handling traffic per line.

Cost of handling traffic per station.

Cost of handling traffic per 1,000 originating calls.

The first two cannot be considered as they are not based on volume of traffic handled. The third could be used for a system having a single exchange, but would be unfair to a system having more than one exchange, because neither the trunk operators nor the traffic they handle is taken into consideration. Thus a system trunking 50 per cent. of the calls handled would suffer in comparison to a system trunking only 25 per cent. of calls handled.

The plan of equating calls has been used for comparing separately the equated calls per "A" operator hour and equated calls per "B" operator-hour in different systems, but no plan of equating both "A" and "B" calls to a standard unit has ever been used, to my knowledge.

Comparative Manual and Automanual Operating Costs.

Figs. 11 and 12 are compiled for the purpose of comparing costs in handling traffic, as between the manual and Clement automanual methods, regardless of variations in salaries, trunking percentages or calling rate per line. These tables are based on the rendition of a four second answering service in the manual systems and a three-second service in the automanual system.

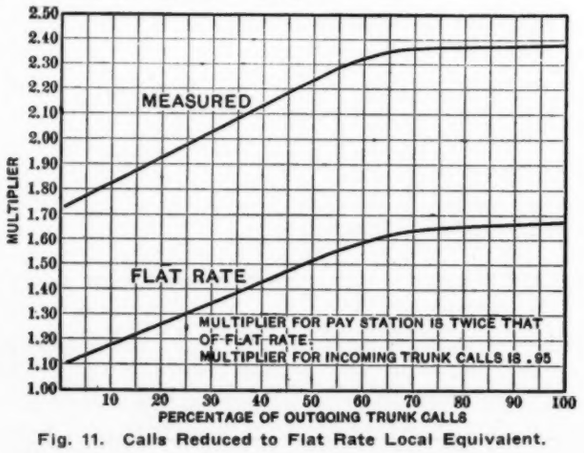

MEASURED
FLAT RATE
MULTIPLIER FOR PAY STATION IS TWICE THAT OF FLAT RATE
MULTIPLIER FOR INCOMING TRUNK CALLS IS .95
MULTIPLIER
PERCENTAGE OF OUTGOING TRUNK CALLS

Fig. 11. Calls Reduced to Flat Rate Local Equivalent.

A standard unit is necessary by which every manual system may be measured and for this unit is employed the flat-rate non-trunked call as it appears in a common-battery multiple switchboard, and for convenience in comparison the cost of handling 1,000 such calls is used as a basis.

Calls other than flat-rate, non-trunked calls require equalizing in accordance with the ratio of effort and time consumed, which is easily accomplished by the use of the multiplier given on the left margin of the curves shown in Fig. 11, as indicated by the point of intersection between the curves and the vertical line corresponding to the previously determined trunking percentage.

Having equalized the calls in accordance with the tables, then divide the total present daily operating expense by the number of such daily equated calls and place the decimal point to show the cost per thousand equated calls.

A comparison can then be made between the cost per thousand equated calls thus arrived at and the cost shown in curves of Fig. 12. At a first glance the multiplier of 95 for incoming trunk calls appears to be rather high, but this is explained by the unavoidable loss in efficiency of a trunking operator during evening and night hours.

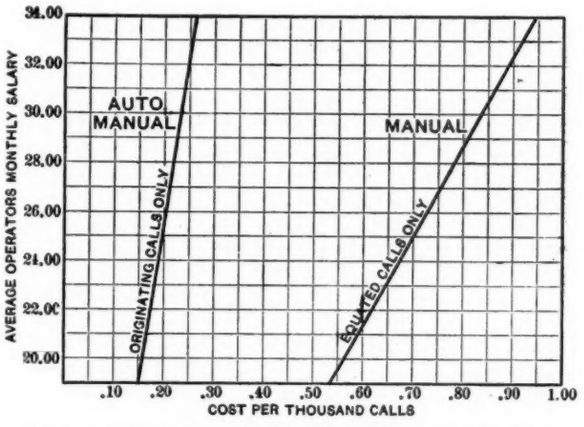


Fig. 12. Manufacturer's Statement of Comparative Costs.

A hypothetical example of a telephone system having two exchanges, shows equated calls for the following daily traffic:

Main Exchange	130,000	flat rate calls, 5 per cent trunked	148,200
" "	3,000	pay station calls, 5 per cent trunked	6,840
" "	6,500	incoming trunk calls	6,175
Branch "	12,000	flat rate calls, 50 per cent trunked	18,000
" "	200	pay station calls, 50 per cent trunked	600
" "	800	measured calls, 50 per cent trunked	1,800
" "	6,650	incoming trunk calls	6,317
Total equated calls			187,932

Number of lines working, 4,162; calls per line, 15.5; 14 operators at $25.00 per month, $350.00; 63,833 originating calls × 28 days (26 week days and 4 Sundays) = 1,787,324; monthly originating calls ÷ into total monthly operating expense, $350.00; = 19.5 cents per 1,000 calls.

Fig 13 shows an automanual schedule applied to the branch exchange of the western telephone company previously referred to and proves out the automanual cost curve in Fig. 12. It will be noted in Fig. 13 that the cost per thousand calls on the automanual operators' schedule is 19.5 cents. By referring to the cost curve in Fig. 12 it will be observed that the cost per thousand automanual calls is 19.5 cents where the average operators' salary is $25.00.

The clearing-house principle illustrated in Fig. 8 is applicable to existing systems, with practically no rebuilding except that of the central office switching equipments; the subscribers' instruments and lines, as well as the general method of handling the subscribers, remaining unchanged. The particular feature which renders this possible is the automatic secondary distribution, which brings calls to the

operators at one or more centers without the necessity of massing or concentrating talking trunks. This feature is peculiar to the automanual systems, and the economies flowing from its employment many be best illustrated by presenting an extreme case involving the handling of the entire traffic load in a large city, at present divided between two competing systems both equipped with manual switchboards. The two systems may be designated as A and B, and the following tables are based on an actual study of their traffic conditions in detail. Table 1 shows the number of telephones in operation in each system, the approximate traffic handled by both companies, and the cost of handling the traffic. Table 2 shows the estimated increase in traffic of both companies as well as the additional cost of operating, if manual trunk lines were connected between two systems, permitting a general interchange of calls. Table 3 shows the cost of handling the combined traffic by automanual clearing-house methods exclusively.

The automanual service is uniform and accurate, because the switching apparatus is all operated over local central office circuits of uniform and known resistance, by expert operators under proper discipline. The benefits of the manual method of operating are preserved, but no cords or plugs are employed, and the service is secret because the operators are cut off automatically when connections are established, and have no way of cutting in on any connection thereafter. The distribution of calls among the operators is uniform, and this condition prevails at all times. An operator may take calls at any position, and light loads can thus be handled at a single position. Patrolling of the switchboard is avoided, and as the number of operators can be varied in direct proportion to the load; no one operator is busier than another at any time. The operator cannot show favoritism, as without special provision she cannot know who originates a particular call, and any subscriber's call may be answered by any operator in the exchange. There is also a decided economy in the matter of space, the size of the operating room being considerably reduced. As regards material for operators, which is a consideration of moment in some parts of the country, it is pointed out that any person who can hear numbers and touch keys is capable of handling traffic automanually. This includes the blind, who make very efficient operators, not only handling the number keys dextrously with little practice, but also reading the lamp signals by touch. I have provided a special signal for the blind, however, so that for them lamps are unnecessary, and may be relegated to the monitors, unless they too are blind.

As the detailed circuits are not described herein, I will state that the talking circuit between subscribers when connected is perfectly clear and in fact identical with the standard bridged common battery circuit employed in modern manual exchanges.

Table 1.—Present Condition

Number of subscribers' lines.....	18,666	13,219	31,885
Number of subscribers' telephones	42,000	27,000	69,000
Percentage of telephones to lines.	2.25	2.05	2.16
Percentage of business telephones.	54	51.5	53
Employes' traffic department.....	498	320	818
Employes' average monthly salary.	$32.50	$31.50	$32.11
Monthly operating expense.....	$16,185	$10,080	$26,265
Originating calls daily..	294,000	216,000	510,00
Originating calls daily per telephone	7	8	15
Percentage originating calls trunked	57	24	43
Cost per thousand originating calls...	$1.97	$1.67	$1.84

Table 2.—Interconnection

Increase in calls per telephone....	1.9	2.1	2.4
Calls to other company.....	79,800	83,700	163,500
Increase in percentage of originating calls trunked.....	9	21.2	14
Additional employes	153	168	321
Increased monthly operating expense	$5,184	$5,292	$10,476
Increase in cost per thousand calls.....	0.27	0.13	12
Percentage of increase in pay-roll..	32%	52%	40%

Table 3.—Automanual

The cost of handling the combined traffic of both systems amounting to 673,500 originating calls per day with the Automanual-clearing-house system based on an average operator's monthly salary of $32.00 would amount to twenty-five cents (0.25) per thousand calls, on a monthly operating expense of $5,051.25. *This makes a reduction in the present operating expense of* 86 *per cent.*

In closing, I wish to acknowledge my indebtedness to Mr. John P. Boylan, of Cleveland, Ohio, for his assistance in compiling traffic data for use in the preparation of this paper.

Extent of Conversation Admissible in Evidence.

Where parties have a conversation by telephone, they may each, in testifying as to what was said during such conversation, testify as to what he said as well as to what he heard, in this way making the evidence intelligible by bringing out the entire conversation. Buchholz-Hill Transportation Co. vs. Baxter, 126 N. Y. S., 514.

Sunday Service Denied.

The corporation commission of Oklahoma, by order No. 443, refused the request of the citizens of Morrison for Sunday service by their local telephone company. The grounds for the refusal were that the existing service was fully adequate as measured by the income received at the Morrison office.

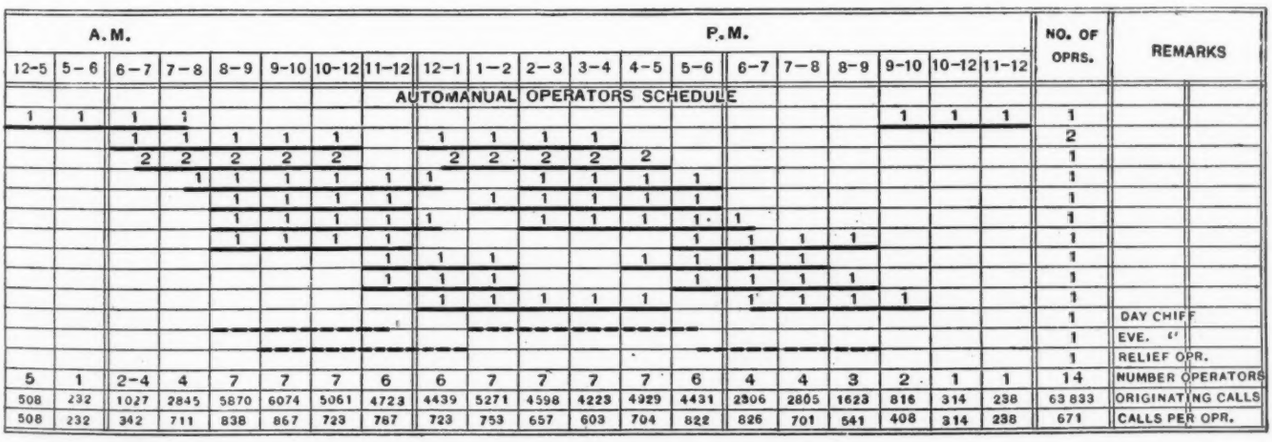
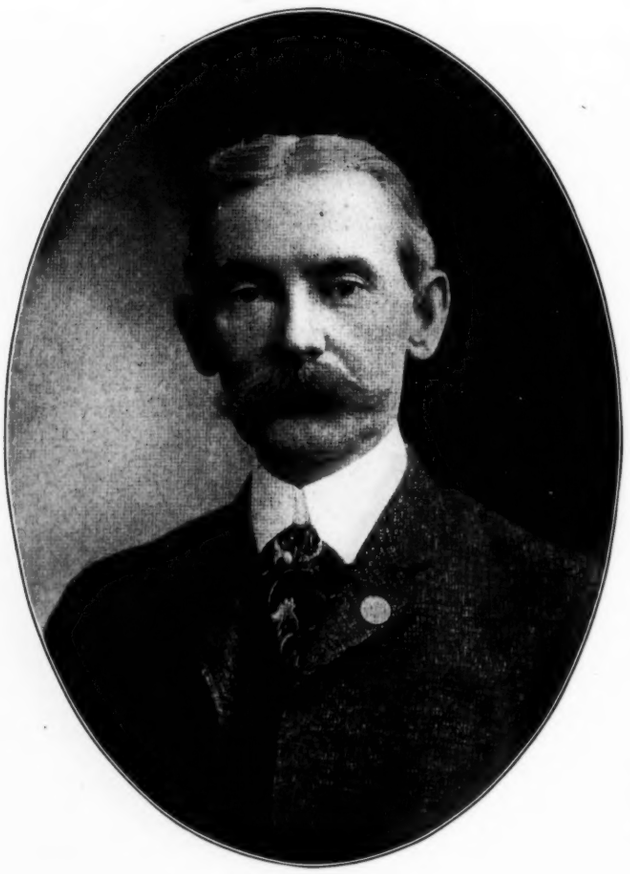


Fig. 13. Operators' Working Hours, Automanual Exchange.

Number of lines working, 4,162; calls per line, 15.5; 14 operators at $25.00 per month, $350. 63,833 originating calls × 28 days (26 week days and 4 Sundays) = 1,787,324; monthly originating calls ÷ into total monthly operating expense, $350; = 19.5 cents per 1,000 calls.

Death of J. J. Nate.

Telephone men throughout the country will learn with deep regret of the death of John Janes Nate, which occurred at the home of his daughter, Mrs. Charles J. Murphy, at Winona, Minn., April 30, 1911. Few men were so well and widely known in telephone circles, and few men were more loved and respected. Among those who knew him well he was "Sunny Jim." Mr. Nate was born at Rochelle, Ill., July 22, 1857, and was educated in the public schools of Evanston, Ill., and the Northwestern University. In the early '70's the family removed to Piper City, Ill., and while there Mr. Nate laid the earlier foundations of his business experience, as the bookkeeper and assistant in the management of a grain and warehouse business at that place. Removing again to Chicago, he was led by circumstances to take an interest in the then new telephone industry, which was to prove both the permanent occupation and the devoted business passion of the remainder of his



John Janes Nate.

life. He entered the employ of the Chicago Telephone Co. in 1878, rising rapidly from lineman to purchasing agent, which position he held during the years of the company's greatest extension and development in Chicago. His total service with the Chicago Telephone Co. was some eighteen years.

When Mr. Nate entered the employ of the Chicago Telephone Co., there were less than fifteen thousand telephones in service in the United States. Today there are over eight million.

About 1895 Mr. Nate resigned his position with the Chicago Telephone Co. and entered the then rapidly developing Independent telephone manufacturing field, first as stockholder and officer of the Metropolitan Electric Co., of Chicago, and later as the secretary-manager of the Standard Telephone & Electric Co., of Madison, Wis. For the past nine years he has been manager of the Northwestern branch at Minneapolis, Minn., of the Stromberg-Carlson Telephone Manufacturing Co., of Rochester, N. Y.

In these successive employments Mr. Nate had become one of the best known telephone men in the country. A frequent writer for the leading technical journals, a familiar figure at telephone conventions, possessing a genial personality and a spirit of good cheer and kindliness, his friends are to be counted by the hundreds all over the land.

Beyond his technical skill his colleagues generously credit him with that which is the highest mark of worth, the absolute integrity and reliability of a true man.

During recent months his health, considerably weakened by a condition of lung trouble, had rapidly failed, and his last business trip into western Minnesota proved too much for a constitution thus previously weakened. He took to his bed some few weeks ago with what was his first enduring illness. Tuberculosis was the cause of his death.

In the kindliness of his life, in his generous relations to his home and in his willing helpfulness among his fellowmen, Mr. Nate has been the personal embodiment of a real gentleman.

Mr. Nate was married at Chatsworth, Ill., January 1, 1880, to May Helena Pope, of Piper City, Ill. His wife died March 18, 1889. One daughter, Elizabeth Ray, wife of Charles J. Murphy, of Winona, Minn., survives her father.

In the passing of "Jim" Nate, as he was familiarly called, the telephone industry loses one of its pioneers, and a man who was universally loved and admired. TELEPHONY extends its sincere sympathy to Mr. Nate's family and voices the sorrow of the telephone men generally at his death.

The voice of the world, we hear it a million times in a day,
It will ring in our ears forever, and what will the world's voice say?
Always a message for someone, bringing them smiles or tears,
Joy or sorrow, or weal or woe, and so we drift with the years,
Listening always and ever, never missing a call,
The love of the gracious Master above and over us all.
The reaper calls for our number. A mound on a sun-kissed hill,
There's a line gone down or in trouble, and the voice of the world is still.

Denies Rumor of Sale of Louisville Independents.

Rumors have gained some currency recently regarding the possible sale of the Central Home Telephone Co. and the Louisville Home company to the Bell interests. These have met with an empathic denial from E. H. Cady, of Toledo, president of the Home.

Mr. Cady stated that the bonds of the Louisville Home are owned in and about Louisville, as is also a large part of the stock, the same being true of the Central Home. It was further stated that the trustees intended to develop the property as a permanent investment.

Bell Wants To Buy Maryland Company.

The Chesapeake & Potomac (Bell) Telephone Co., has filed a petition with the Public Service Commission asking that an order be passed authorizing it to purchase the capital stock of the Western Maryland Telephone Co., of Alleghany county. The Chesapeake & Potomac company has obtained an option for the purchase of the $100,000 stock of the Western company. By this option the Chesapeake & Potomac agrees to pay $40,000 in cash and $40,000 in the common stock of the American (Bell) Telephone & Telegraph Co.

Circuits of a New Automatic Exchange System

Conclusion of Abstract of a Paper on "New Automatic Telephone Equipment" presented at the Los Angeles Convention of the American Institute of Electrical Engineers, April 25—26, 1911. The Circuits Shown Utilize Apparatus Described in the Preceding Section of the Paper

By C. S. Winston

Chief Engineer, Kellogg Switchboard & Supply Co.

The circuits of a two-wire system including a subscriber's instrument with a calling device of the "set-up" type, an individual 10-point line switch, first selector, second selector and connector, using the double rotary switch with forward release, are shown in Figs. 7 to 10. It should be borne in mind that it is improbable for various reasons that the circuits shown or the apparatus will be used in practice without changes of a more or less radical nature.

The various steps which take place in establishing a connection between two stations as A in Fig. 7 and B in Fig. 10 will be as follows:

When the subscriber at station A removes his receiver from the hook, he will establish a circuit from the grounded terminal of battery 1 over the metallic circuit of the telephone line, through the winding of relay 2 to the negative side of battery 1. Current flowing in this path will cause the energization of this relay, thus establishing a second circuit through the winding of relay 3. The energization of the latter will allow alternating current from generator G to pass through the winding of driving magnet 4, thus stepping forward the wipers of the switch, so as to engage contacts of the switch bank. The connections of the off-normal springs O N will be changed as soon as the wipers have taken the first step from their normal position, and hence contacts c and a will be broken and c' and a' closed. It will be seen that as soon as these changes take place the circuit over which relay 3 was energized will be broken at contact c, and hence that this relay will then depend for its continued energization upon the condition of the contacts over which the private wiper P is passing. The bank contacts of this switch are multipled with the bank contacts of other line switches and are connected to first selectors. When a first selector switch is in use, its private contact will be connected to ground, as will be described later. If, then, the first private contact is grounded when wiper P reaches it, relay 3 will remain energized and the driving magnet will step the wipers ahead until a second contact is reached. If this contact is not connected to ground, relay 3 will fall back to normal, thus breaking the circuit through the driving magnet 4 and the wipers L', L^2 and P will come to rest upon contacts b, b' and b^2 respectively. When relay 3 becomes de-energized, a circuit will be closed through contact x of relay 2, closed contact c' of the off-normal springs, back contact c^3 of relay 3, and the winding of relay 5. Current flowing through the winding of relay 5 will cause it to attract its armature, thus opening the circuit which previously existed through the winding of relay 2. This latter relay would fall back immediately were it not for the fact that it is a slow releasing relay. The instant that relay 5 is energized, relay R of the first selector (Fig. 8) will attract its armature, due to current flowing through its two windings and the subscriber's line and instrument in series, thus causing the energization of relay R' and connecting ground through contact c^3 to contact b^2 on the line switch, and preventing other line switches from connecting with this first selector. The energization of relays 5 and R is accomplished in a small fraction of a second and relay 2, although the original circuit through its winding was opened by relay 5, remains energized over a second circuit which extends from battery 1 through its winding, contacts c^2 and c^4, private wiper P, bank contact b^2 to ground at the armature of relay R.

The calling instrument will then be connected to a first selector, and the subscriber will proceed to set up on his calling device the number of the station desired, for example 5472, and turn the starting lever. Contact K will then be opened and closed five times while contact K' remains closed, thus preventing the subscriber from receiving a disagreeable click. Each time the circuit is broken and closed in this manner relay R of the first selector will be de-energized and energized and a circuit will be established five times momentarily from ground at the armature of relay R, through contact K^4 of relay R' contact K^2 of the secondary off-normal, thence through relay R^2 and the horizontal or "primary" magnet, P M—1, in multiple to the negative or non-grounded side of battery. The relay R^2 will attract its armature the instant current flows through its winding, and as it is of the slow-release type, its contacts will remain open during the make and break periods of relay R, and the primary magnet P M—1 will force the wipers of the switch forward one step, in the horizontal direction, for each current impulse. After the impulses cease relay R^2 will fall back and current will flow from ground

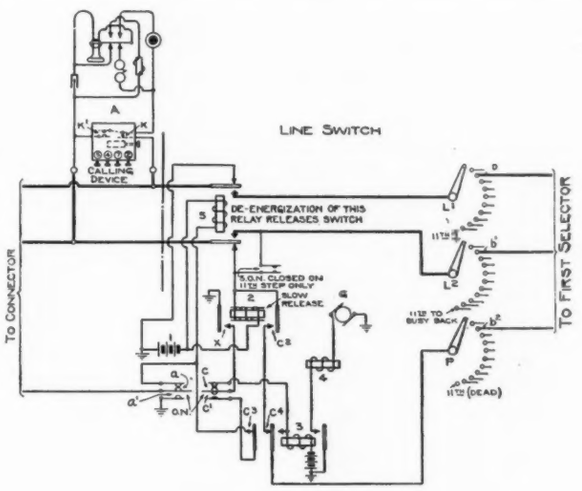


Fig. 7. Line Switch Operated Over Metallic Circuit.

through the contact of relay R^2 and the primary off-normal contacts x and x' (the three springs which form these contacts will be bunched at all times when the switch is out of its normal position) through the secondary off-normal K^3 to the negative side of battery through the winding of relay R^3. The energization of this latter relay will close a path for alternating current from generator G' through the winding of the vertical or "secondary" magnet S M—1 to ground, thus causing the switch wipers to move vertically and hence to engage the bank contacts. As soon as the switch makes one vertical step, off-normal contacts K^2 and K^3 will open and relay R^3 will depend for its continued energization upon the condition of the contacts over which private wiper P^1 is passing. As soon as this wiper rests upon a contact which is not busy and hence ungrounded, the flow of current through the relay R^3 will cease, thus breaking the circuit through the secondary magnet, and the switch will come to rest. The circuit from the subscriber's instrument will then be continued to a second selector. The falling back of relay R^3 will place a ground upon wiper P', thus rendering the second selector busy and preventing other

first selectors from being connected with it. This ground connection will also cause the energization of relay R^4 of the second selector.

After these circuit changes have taken place, the subscriber's calling device will break and close the line circuit four times, and again relay R of the first selector will be de-energized and energized. At this time, however, the circuit through the primary magnet $P\ M$—1 of the first selector will be open at the secondary off-normal contact K^2, and circuit changes similar to those which took place at the first selector will occur at the second selector (Fig. 9). When relay R^6 of the second selector falls back after an idle contact has been located by the private wiper P^3 the calling line will be connected through the line wipers L^5 and L^6 to the connector, and a ground connection will be placed upon the private wiper P^2 which will render the selected connector busy and establish a circuit through which relay R^7 of the connector will be energized.

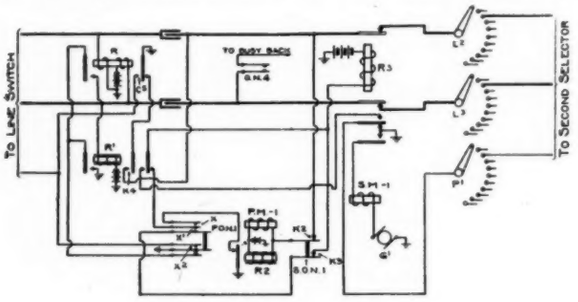


Fig. 8. First Selector Wiring.

When the calling device causes the de-energization and energization of relay R of the first selector for the third time, the primary magnet $P\ M$—3 of the connector (Fig. 10) will move the wiper seven steps in a horizontal direction, while the slow-acting relay R^8 will retain its armature in the attracted position. When the impulses cease and relay R^8 is restored to normal, relay R^9 will be energized over the path which begins at ground at the primary off-normal contact $P\ O\ N$—3 and extends through contacts K^5 and K^6, the winding of relay R^9 to battery. As soon as relay R^9 is energized, contact K^7 will be closed and K^6 broken and hence this relay will depend for its subsequent energization upon current flowing from ground through contact K^8 of relay R^6 of the second selector. The energization of relay R^9 will cut the primary driving magnet out of circuit and in its stead place the secondary magnet $S\ M$—3. This is the condition of affairs which will exist when the last set of impulses, two in number, is sent from the calling subscriber's station. The secondary magnet $S\ M$—3 will give the switch wipers their vertical movement, while relay R^8 will be energized a second time and locked, while the impulses are being sent, through its own contact K^{12} (contact K^{10} of the secondary off-normal opens with the first vertical step of the wipers) and assume its normal position as soon as the flow of interrupted current ceases.

At this stage of the proceedings one of two things will happen, depending upon whether the called line is busy or not busy. If busy, the private contact upon which wiper P^3 rests will be connected to ground at the off-normal contact $O\ N$—2 or at a second connector which is connected to the called line. As a result relay R^{10} will remain inactive and the busy-back signal will be given to the calling subscriber. The circuit over which this signal is given may be traced from ground at the busy-back induction coil I, through contact K^{20} of the secondary off-normal $S\ O\ N$—3 contact K^{16} of relay R^{11}, to one side of the talking circuit, thence to ground through one winding of relay R and also over the subscriber's line and through the second winding of relay R. If, on the other hand, the line is not busy when the wiper P^3 reaches its private contact, current will flow from the positive pole of battery at contact K^{17} of relay R^{16} through contact K^9 of relay R^7, contact K^{10} of relay R^8, winding W of relay K^{19} to the private wiper P^3, thence to the private contact of the called line, through the winding of relay 15 to the negative pole of battery. Current flowing over this path will energize relays R^{10} and 15. A circuit which maintains relay R^{10} energized will then be established, through the winding W^1 and contacts K^9 and K^{21}, which will shunt out of circuit winding W and also connect ground to private wiper P^3, thus rendering the called line busy. Relay R^{11} will be energized immediately after R^{10}. When contact K^4 of the latter is closed current will pass intermittently through the winding of relay R^{12} and the interrupter T in series, thus causing the contacts of relay R^{12} to be closed and opened alternately, and connecting ringing current through the wipers L^7 and L^8 to the called line. Each time relay R^{12} is de-energized, the two windings of relay R^{13} will be connected to the line, so that current will pass through them when the circuit is closed by the removal of the called subscriber's receiver.

When, in response to the ringing of the bell, the subscriber answers, relay R^{13} and hence R^{14} and R^{16} will be energized, and the instruments of the calling and called subscribers will then be connected together for conversation. Talking current for the latter will be supplied through the windings of relay R^{13}, while the calling subscriber will receive his supply of current from relay R of the first selector.

When conversation has been finished and the called subscriber hangs up his receiver, he will cause the connector switch to be released and restored to normal, while this same act on the part of the calling subscriber will restore the line switch, the first selector and the second selector. The control of these three switches rests primarily with relay R^1 of the first selector. When relay R is restored to normal R^1 will also be de-energized, and current will flow through the winding of relay R^3, causing the latter to attract its armature, thus closing a circuit for generator current through the secondary magnet $S\ M$—1. The latter will then drive forward the wipers of the switch and when the contacts of off-normal $P\ O\ N$—1 are opened, the circuit which has previously existed through R^3 will be opened and the first selector will be in normal position.

When the off-normal contacts $P\ O\ N$—1 resume their normal positions contact x^2 of the first selector will be opened and therefore relay 2, and hence relay 5, will return to normal position. The de-energization of the latter will restore the line switch wipers to normal.

When relay R^3 becomes energized, the circuit from ground over the private P^1 was broken and relay R^4 of the second selector assumed its normal position, thus causing the release of the second selector in a manner very similar to that in which the first selector was restored.

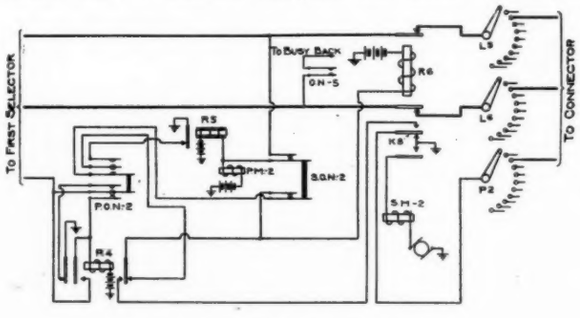


Fig. 9. Circuit of Second Selector.

The method by which the disconnection of the connector is accomplished may be briefly described as follows: Relay R^{13} will resume its normal position the instant the circuit is opened at the called subscriber's switchhook. The cut-off relay R^{14} will then be de-energized, but relay R^{16}, which was energized when the called station responded, will remain in its energized

position due to current flowing from ground at off-normal $P\ O\ N$—3 through its winding and normally open contact K^{18} to battery. Therefore, upon the de-energization of relay R^{14}, relay R^{15} will attract its armature, thus allowing alternating current to flow through the secondary magnet $S\ M$—3 and also placing ground upon the private contact and preventing the connector from being selected during the time of release. As soon as the primary off-normal contact is restored to normal, relay R^{15} will fall back and open the circuit through the secondary magnet. The switch and all relays have then assumed their normal position. If the called subscriber does not

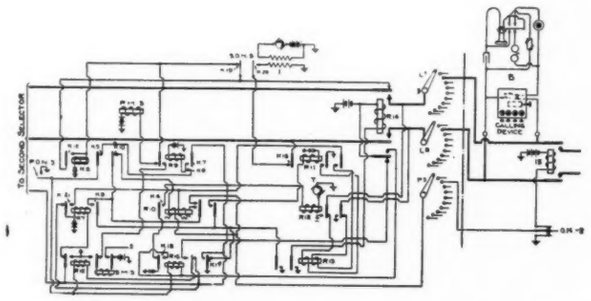


Fig. 10. Apparatus and Wiring of Connector and Called Station.

respond the control of relay R^{15} and hence the release of the connector switch will remain with the calling subscriber.

If, at the time a subscriber removes his receiver from its hook, each one of the 10 first selectors connected to the line switch is busy, the wipers of the switch will stop upon the eleventh contacts. As the eleventh private contact is dead, relay 3 will fall back and relay 5 will be energized, as it will when the wiper P rests upon a contact of an idle trunk. However, there is provided on this switch a special off-normal contact $S\ O\ N$ which is closed only when the wipers are in the eleventh position. In this case, therefore, as soon as relay 5 becomes energized, a path for current through relay 2 is again established over the subscriber's line, through the wiper L^1 to ground at the eleventh contact. A connection from the busy-back induction coil is brought to the contact upon which wiper L^2 rests, and hence the subscriber will be notified that he cannot immediately obtain a connection. As soon as he hangs up his receiver, relay 2 and hence relay 5 will be de-energized and the switch will be restored to normal.

The first and second selector switches are each provided with off-normal contacts ($O\ N$—4 and $O\ N$—5 respectively), which will cause the busy-back signal to be given to a calling subscriber when the wipers of a switch have made eleven vertical steps, as will be the case when all of the ten trunks in a group are in use.

In nearly, if not in all, existing automatic exchanges, battery current is used for driving the selector wipers to select an idle trunk. In some cases a break contact on the driving magnet interrupts the current, and in others an individual interrupter, which serves a number of switches, is used. As already stated, the system described contemplates the use of alternating current. It is the intention to use current of approximately 20 cycles, and as a result the wipers will pass over the trunk contacts at the rate of 40 contacts per second. Therefore, in the case of the line switch one-quarter of a second will be required for the wipers to pass over an entire bank of ten contacts, and this speed is so great that there is no danger that the subscriber will operate his calling device before the trunk has been selected.

Methods of Securing High Efficiency in the Operation of a Toll Line System.

The following data, of general interest to all men concerned in the handling of groups of toll lines, is taken from a paper presented at the convention of the National Independent Telephone Association by Mr. George K. Gann, traffic manager, Lincoln (Neb.) Telephone & Telegraph Co.

It is not always possible to correctly predict the growth of every portion of the plant or to provide additional facilities in time to prevent congestion. Special operating methods are sometimes justified in such cases if they will aid in increasing the efficiency of the plant. As an example, the writer has in mind a certain circuit between two large cities that is badly congested. For various reasons it has been impossible to provide sufficient additional circuits to remove this congestion. The use of the Morse order wire method has been suggested to increase the efficiency of this circuit; that is, to pass all calls and reports by telegraph. Right here it may be said that this method is also of peculiar advantage in temporarily increasing the efficiency of circuits when the plant has been crippled by a sleet storm. On one such occasion the actual load on a certain circuit ran as high as 150 messages per day for two consecutive days. This load was handled by the aid of a Morse wire and, while the service was rather slow, the delays were not unreasonably long. Of course, good service cannot be given and such high circuit loads maintained as an everyday matter. During a temporary emergency, such as a sleet storm, reasonably slow service can be given without seriously affecting the public attitude towards the company's service.

Economy in Service Time Is Money.

It is not generally realized what effect the saving of even a few seconds operating time per call will have on the circuit load. For example, the following figures were recently compiled to show what could be done to increase the efficiency of the circuit before referred to. The distance between the two cities is about 250 miles and the rate is $1.00 per 3 minutes:

Average interval between messages comprising operating and dead time.	Possible number of messages per hour at 3 min. each.	Total number of messages during two busy hours.
180 sec.	10	20
120 "	12	24
60 "	15	30
40 "	16.6	33
20 "	18	36
0 "	20	40

Revenue from messages during two busy hours at $1.00 per message.	Increase in revenue two busy hours	Increase in revenue per month of 26 days.
$20.00	.....	...
24.00	$4.00	$104
30.00	10.00	260
33.00	13.00	308
36.00	16.00	416
40.00	20.00	520

These figures show that if the average delay between messages consumed by the operators in passing calls and reports and establishing connections can be reduced from 180 to 120 seconds, it will be possible to handle four additional messages during the two busy hours. At this rate of $4 per day for a 26-day month, the theoretical increase in revenue would be $104, taking into consideration only the two busiest hours of the day. In the same manner, if the interval could be reduced to 60 seconds, the increase in revenue would amount to $260. Either of these savings would justify the employment of one Morse operator at each end of the circuit. This computation has been carried out to the theoretical result which might be obtained were the circuit kept constantly busy with paid messages.

Whether these figures are taken at their face value or not, it is undoubtedly true that between this point and the point of maximum average delay between messages, there is room for a considerable increase in efficiency. On very long circuits or on large groups of short circuits carrying heavy traffic, it requires a very little increase in circuit efficiency to warrant the employment of additional operating force, if the desired results can be attained by that means. An important point to be borne in mind, however, is that the increased operating expense must not exceed the annual charges on an additional circuit or circuits. If additional circuits will increase the efficiency of the plant to the same extent as the special operating methods, and at the same or less annual cost, it is, of course, better to construct the circuits.

Efficiency of Phantom Circuits.

Special operating methods are simply efforts to increase the efficiency of the telephone plant; that is, to conserve its resources for the benefit of the stockholders. Under present conditions in the telephone business, it is becoming vitally necessary that the plant be operated at its highest efficiency and that advantage be taken of all things which will help attain this result. There is nothing else which has so increased the efficiency of the long-distance plant, at less cost, than phantom circuits. It now seems inexcusable to most of us not to take advantage of the possibilities of phantoms. There are still some of the larger long-distance companies, however, which are not using them at all, or only to a limited extent. The technical properties of such circuits have been covered in great detail by numerous writers and there is perhaps only one point which has not been given the attention it deserves.

Until recently some of the larger long-distance companies have argued that the phantom could not be depended upon for regular traffic because its liability to trouble was just twice as great as the physical circuit. In their words, it was like "putting all your eggs in one basket." Even representatives of the A. T. & T. Co. argued this way when asked why they did not use phantoms more generally. That this belief no longer holds good is evidenced by the fact that they are now preparing to phantom such circuits as those between Chicago and New York and Omaha and Denver. Experience has proven that a phantom circuit may be figured on as a permanent part of the wire plant, and that the principal difference between it and a physical circuit is that the phantom is the better of the two. Some time ago the writer was interested in noting the trouble that occurred on physical circuits and its effect on the phantoms. On two average physical circuits, phantomed, the following was about the showing made:

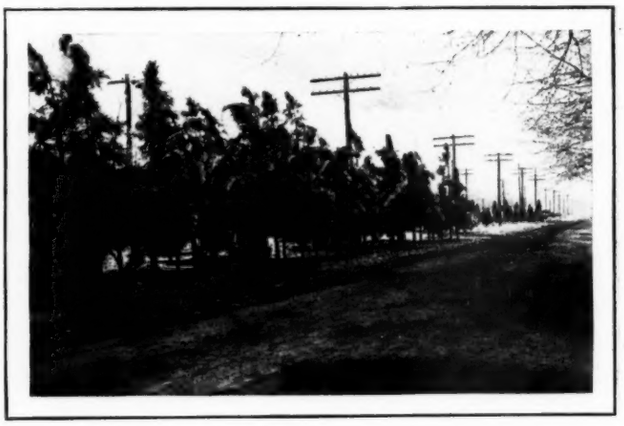
Remarks.	No. 2 Physical out of service.	No. 1 Physical out of service.	Phantom out of service.	Description of Trouble—No. 2 Physical.	Description of Trouble—No. 1 Physical.
		Yes	No		Short
	Yes	Yes	No	Short	Short
Phantom slightly noisy. Could be used commercially.		Yes	No		One side open
	Yes		Yes	Both sides open	
Slight noise on phantom.		Yes	No		Crossed with foreign wire
	Yes	Yes	No	One side open	One side open
	No	Yes	Yes		Grounded
Cross was high resistance.	Yes	Yes	No	Crossed with No. 1	Crossed with No. 2

Compilation of Records Showing that Phantom Frequently Remains Working While Troubles Have Put Physicals Out of Commission.

These figures were taken from the actual trouble reported on several different groups of circuits. They cover a period of about six months. All duplicate troubles were eliminated in order to show a wide range in variety. It is especially interesting to note that the above table shows eight different troubles on the physical circuits, six cases of which did not prevent the phantom from being used and two which did render the phantom unfit for service. IN THREE CASES BOTH PHYSICAL CIRCUITS WERE OUT OF COMMISSION AND THE PHANTOM WAS STILL AVAILABLE FOR COMMERCIAL SERVICE. It would be difficult to present a more convincing argument to disprove the old idea of the unreliability of phantom circuits.

A Frosty Day in Southern Pines, N. C.

Through the kindness of Mr. Bernard W. Leavitt, of the City Telephone Co., of Southern Pines, N. C., TELEPHONY is enabled to present this interesting view of his lines on a



Main Lead of City Telephone Co., Carrying Sleet.

frosty morning. The effect upon the pine trees in the foreground is very interesting. The photograph does not clearly show that the lines are carrying half an inch of sleet. The way they stand up under it is evidence of the sound construction, which is further borne out by the sightly appearance of the lead, built of straight, cleanly set poles and firmly attached cross-arms.

Objection to Fixing of Rates by Florida Cities.

Hon. Ed. Scott, general manager of the Arcadia (Fla.) Telephone Co., has been at Tallahassee as a member of the legislative committee of the Florida Telephone Association to oppose a bill introduced by MacWilliams, of St. Johns county, giving city councils the right to fix telephone rates. Mr. Scott favors in preference to this the Dorman bill, giving the railroad commission the right to fix rates and regulate all matters pertaining to the telephone business. This would be much more desirable than the MacWilliams bill, for if these things were left with city councils it would keep strife in local politics forever and a day.

Telegraph Superintendents Postpone Convention to June 26

Later Dates for Meeting of Railway Telegraph Superintendents Assure Biggest Convention Ever Held—Secretary P. W. Drew Enthusiastic Over the Prospects—Great Western Installs First Train Dispatching Circuit to be Followed by Others—Indiana Enforcing Wire Crossing Law

This Department Open for Practical Questions.

This week an innovation upon this page is the publication of a question on a practical matter received from a railway telephone man, with an answer correctly covering the information desired. TELEPHONY has many special facilities for furnishing technical and practical information to its readers, and wishes the railway men to take the fullest advantage of their department by sending in their questions.

One need feel under no special obligations to the paper in using this service, for the editors feel that when they print an article in answer to one of these questions asked by a practical man about some feature of his regular work the matter is sure to be of general interest. So we are glad to have an opportunity to be useful in this way.

Railway telephone men are cordially invited to submit their problems to TELEPHONY, which guarantees a solution prepared by a thoroughly competent man actually engaged in railway telephone work.

Convention of Railway Telegraph Superintendents to be Held at Boston, June 26-30—Large Attendance Predicted.

The new dates for the convention of the Association of Railway Telegraph Superintendents will be June 26 to 30, 1911. The meeting was postponed in order to insure a larger attendance, as the early dates were found to be inconvenient for a large number of members. The first session will be called at 1:30 p. m. Monday, June 26. The omission of a morning meeting will make it possible for members who arrive late to make all arrangements for becoming comfortably settled at the hotel, and renew acquaintances during the latter part of the forenoon, and get ready for business at the afternoon meeting. The headquarters will be at the Hotel Brunswick, and in a short time Secretary Drew will mail out notices advising members of rates, etc., at which time members can make reservations by corresponding directly with the hotel.

Secretary Drew, when seen on Wednesday of this week, was enthusiastic over the prospects for this year's convention, saying it would be the biggest and best ever held. He tells TELEPHONY that over 60 active members have already signified that they will be present, and takes this as a good sign that many more who are not willing to commit themselves just yet will surely be on hand. Although it takes a good deal of time for some of the members to get to Boston, some from the far West have already stated that they will be there. The total attendance is expected to be from 150 to 175.

The report of Mr. G. A. Cellar on Railway Wire Crossings is already in the hands of the secretary, and Mr. Cellar will be present to read and discuss the report. This is a most important matter and it will be to the interest of all roads to be represented in the discussion, and take action on this report.

Mr. Cellar has secured agreements from representatives of the various wire using interests, including power transmission, telephones, etc., and it is likely that his report will be adopted by the railroads, and the kind of construction it recommends enforced at all crossings hereafter.

Other papers which are expected to be very valuable are those which will be read by Mr. C. A. Camp and M. E. Launbranch, and several others not yet announced.

Mr. Drew is preparing a badge which will be one of the pleasant surprises of the convention.

Great Western Installs First Telephone Circuit.

This week officials of the Chicago & Great Western Railroad are testing out their first circuit employing the telephone for dispatching. This is being done on two lines extending from Chicago to Oelwein, Iowa, a distance of 245 miles. One line is of 210-pound copper, No. 9 B. & S., and the other is No. 8 iron. Both circuits are broken about midway, at Stockton, where the dispatcher's office is located.

This pair of circuits will mark the entry of the Chicago & Great Western Railroad into the field of telephone dispatching. The officials of the road are confident of the success of the telephone, and there is little doubt that from now on various additional divisions will be gradually covered with this most modern type of dispatching equipment.

Indiana Commission Enforcing Wire Crossing Law.

The governor having issued his proclamation declaring the acts of the last general assembly in full force and effect the Indiana Railroad Commission has sent out its inspectors with instructions to enforce the provisions of the law regarding the safety of telephone, telegraph and electric wires that cross railroad tracks. The wires must be of aluminum or copper, and supported on either side of the track by substantial poles not farther than eighty feet apart, and the wires must clear the track at least twenty feet.

Canadian Pacific Installing New Telephone Circuit.

The work of changing the Canadian Pacific Railways system of train dispatching from telegraph to the telephone has been started on the company's line between St. John and McAdam Junction. It is expected the new service will be in operation by July 1.

Argentite, a Malleable Ore of Silver with Negative Temperature Coefficient.

In the March 11 TELEPHONY, page 318, you mentioned a patent issued to Eugene Garretson, Buffalo, N. Y., No. 985,024. It described a telephone current selector, wherein Argentite is used. The invention was designed to eliminate a condenser in a bell circuit by providing a filament of negative temperature coefficient in series in the circuit. The filament was to be made of Argentite or other metallic oxid. It was claimed that battery current would be practically prevented from flowing through this circuit because of its low voltage, but that an increase of pressure due to the use of ringing current would heat the filament sufficiently to permit sufficient current to flow through to operate the bell. I would like to know what Argentite is, and how it sells. Where can it be obtained?

Argentite is a malleable ore of silver (Silver Glance), chemical formula AgS; Sp. Gr. 7; hardness 2-2.5; resembles pure graphite. The specific resistance is over 10,000,000 times that of copper when the material is cold, but drops to about that of mercury when heated to 220° Fahr.

To the best of our knowledge the compound cannot be purchased in this country, but samples suitably mounted and having welded copper terminals can be had by those interested at cost of handling by application to Mr. Eugene Garretson, 615-618 White Bldg., Buffalo, N. Y.

Queries on Theory and Practice

By Arthur Bessey Smith, E. E.

Dry Battery to Be Moistened When Put in Service.

I am sending you herewith a circular describing a new (to me) dry battery. How long has it been on the market? How is the vent closed to prevent the evaporation of moisture? Would you advise a telephone company which would not use more than a barrel of dry cells per year to purchase the ordinary dry cell, or this new kind?

The cell advertised in the circular is dry till needed. Then water is added, which makes the chemicals active. The hole through which water is poured in is then closed with a slotted wooden plug. This cell has been on the market about two years. We do not know with what success you could use this cell, as we have not seen any tests of it, or heard of any companies who are using it. However, the principle seems to be good, for it is well known that dry chemicals do not deteriorate very much.

Phantom Circuit on Iron Line—Good Splices.

I would like to have you tell me how to install a Phantom telephone circuit.

We have two pairs of No. 14 soft iron, 6½-mile line run on same crossarms, one pair on each side of pole. About how many times should each pair be transposed? Which method of splicing is best for soft iron where there is no sleeve used?

Your procedure should be as follows: First, test for insulation, and if not high, clear all leaks. Transpose each metallic line every mile, staggering the transpositions. Next, measure the resistance of each of the four wires, to be sure that they are equal, or very nearly so. Make the tests on the same day, and as close together as possible, to avoid errors due to changes in temperature. You will need to disconnect all telephones during the test. Short-circuit the four wires at the distant end. Number the wires 1, 2, 3

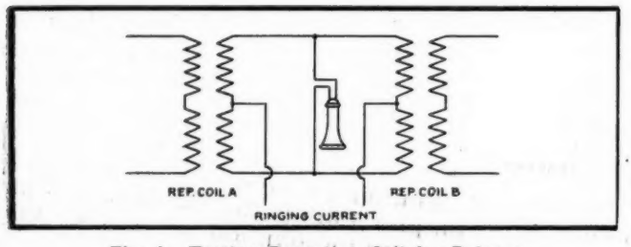


Fig. 1. Testing Repeating Coil for Balance.

and 4. Using Line 1 as a common return, measure the resistances of 2, 3 and 4 separately. Then measure 2 and 3 together. If all these measurements come out approximately equal it is safe to apply the phantom. If not, the high measurements indicate high resistance joints, which must be located and repaired.

Buy your repeating coils of some manufacturer who makes them for this class of service. Don't use a cheap

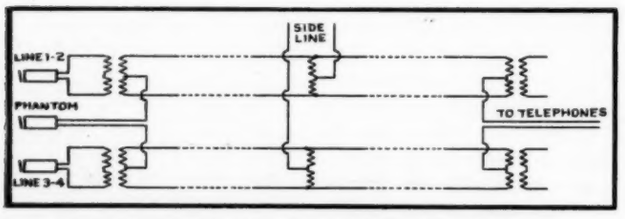


Fig. 2. Phantom Circuit with Side Line.

coil. When you get the coils, test them for balance as follows: Wire them up as directed by the manufacturer, which will give you an arrangement like *A* or *B* in Fig. 1. Then connect two of the coils as shown, with a good sensitive telephone receiver across the line. Have all connec-

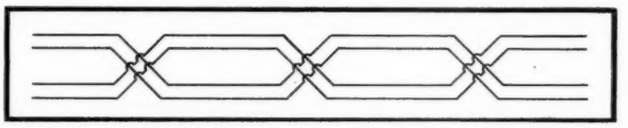


Fig. 3. Transposing Phantom as if Each Metallic Line Were a Single Circuit.

tions thoroughly soldered. Then connect the ringing circuit as shown. You should not hear it in the receiver. If

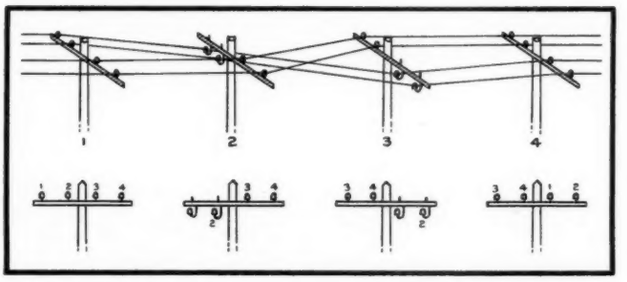


Fig. 4. Running Transposition, Neither Physical Transposed.

you do, either you have not connected the windings right, or the coil is not in balance.

When your coils are correct, locate them at some con-

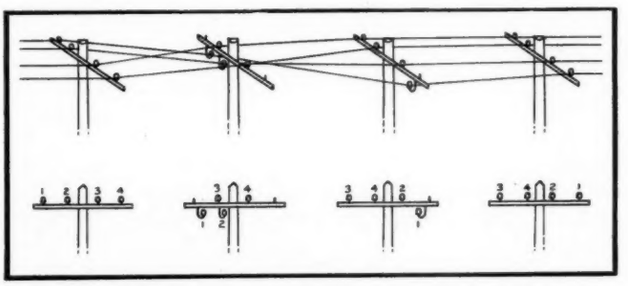


Fig. 5. Phantom and Lower Physical Transposed at Same Pole.

venient point at each end of the line. Both metallic lines must be run in the same size wire clear to the coils. That is, if at the entrance to the office you connect from No. 14

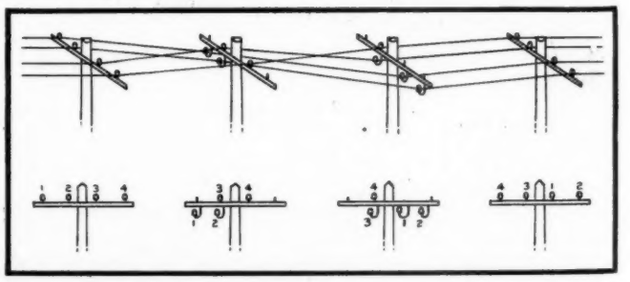


Fig. 6. Transposition of Phantom and Upper Physical at Same Pole.

B. B. iron outside to No. 14 B. & S. copper for the inside run of one circuit, you must make all four wires of No. 14 copper. Twist each pair, so as to continue the transpositions. Any repeating coil which taps a side line onto the phantom between the ends, must be protected from the weather and lightning. If you cannot place it in a near-by house, make a thoroughly weatherproof pole house and

mount the coil in it, together with the required arresters.

The complete layout is given in Fig. 2. Do not cut in any phantom transpositions till you need them. Keep the lines well insulated and free from high resistance joints (whether in protectors or anywhere else). If you get cross-talk, cut in three transpositions as indicated in Fig. 3. Use the running transposition, as shown in Fig. 4. The illustration shows four poles in perspective, with the two metallic circuits completely transposed from pole 1 to pole 4. Each pole and crossarm is also shown in detail in Fig. 4. Pole 1 is like all poles up to the transposition. On pole 2, the lines *A* and *B* are dropped below the cross-arm on underhanging brackets. On pole 3, the brackets are carried under the new position, and lines 3 and 4 carried over to pins 1 and 2. On pole 4, lines 1 and 2 rise to their new position. This method maintains insulation equal to a simple untransposed line, and a broken insulator is not likely to cross the wires.

Figs. 5 and 6 show the methods for transposing each of the metallics at the same place that the phantom is transposed. In all cases the running transposition on entirely separate insulators is to be preferred to the square transposition on a single two-piece insulator.

Figures 5 and 6 show the methods for transposing each of the metallics at the same place as the phantom is transposed—in all cases the running transposition.

In iron wire, if the sleeve is not used, some telephone men make three-wire splices. The three-wire splice has more contact surface than the two-wire, and is considerably stronger. The method of making it has been described often enough so that it need not be repeated here. We recommend, however, the sleeve splice first; and, second, the two-wire splice, thoroughly soldered. Better do it right in the first place than spend a lot of valuable time and money in unnecessary trouble shooting.

The Telephone as an Advertisement Gatherer.

The graphic manner in which the Chicago *Record-Herald* employs the telephone to secure classified advertisements

THE CHICAGO RECORD-HERALD
FRANKLIN 44
THE LATCHSTRING OF OPPORTUNITY IS FRANKLIN 44
It always hangs outside.
Whatever it is you want, PHONE IT TO THE RECORD-HERALD.
If your name is in the Telephone Directory, that's enough—
Your want-ad will be inserted next morning.
The bill will follow by mail.

How the Record-Herald Employs the Telephone.

is well illustrated by the accompanying reproduction of a display quarter-page from a recent issue. One significant feature in the advertisement is the following clause: "If your name is in the telephone directory, that's enough—your want-ad will be inserted next morning. The bill will follow by mail." The *Record-Herald* is not the only concern which has discovered the high percentage of paying quality among telephone subscribers

A Peculiar Inconsistency of Chicago Bell Advertising.

There is some man employed in the advertising department of the Chicago Telephone Co., who has a finely developed sense of humor. He has sent out, over the company's signature, a card insinuating that monopoly is a bar to progress.

Have you a monopoly

Have you something to sell that is not offered for sale elsewhere? Can you sit back in your chair and say, "They must come to me. They've got to like the way I do business?"

If you have – read this argument

You need not worry about your trade. If your patron can't reach you over the telephone and place his order, he **MUST** come to see you or send a messenger.

You have no competitors

It would be foolish to spend a few cents more per day for a two-party line. What's the use in making it easier for your patrons to reach you? You might as well save the extra cost.

Let your patrons grin

No customer enjoys calling several times to reach you by telephone. The frequent busy-signal might **encourage** him to order elsewhere. But he can't do it – there's no other place to buy. Let him grin and bear it.

If four-party service is good enough to take care of **YOUR** out-going calls, it **MUST** be good enough for those who want to reach you. You pay for service for your **OWN** use, not for your patrons.

But don't make a mistake

Don't make believe you have a monopoly when you haven't. You are liable to lose trade to a competitor. Get as good telephone service as he has. Encourage people to order by telephone. Then you will stand an equal chance. If you want **MORE** trade than you now have, get a two-party line.

Let your patrons reach you when they have orders. It's business.

CHICAGO TELEPHONE COMPANY

Can We Believe Our Eyes?

Perhaps he never heard of old Adam Smith and what he said about this. It certainly is unnecessary for a Bell telephone man to read the works of any writer on monopoly. If he wishes to learn the truth he simply needs to cast a glance, with sharp common sense, over the history of the Bell Telephone Co., and observe its present condition. The Chicago man seems to have done this, and written what was in his heart. At any rate he did give expression to the idea, in fact to the belief of his company, a belief which it held so confidently that it was willing to spend money and go on record before the public upon the conviction—that *it takes a jolt to start a monopoly or a near monopoly into any progressive action.*

When it comes down to the fine point the Independents and the sensible men among the Bell organization feel about alike on these fundamental propositions. The only trouble is that the Bell field is dominated by a set of smug Puritan overlords who impose a fake policy that prevents the men in the organization who know real conditions, and are willing to speak of them as they exist, from getting down to business and hustling on the ground floor.

Chicago Electric Club Discusses Public Utility Commissions.

At the April 5 meeting of the Chicago Electric Club, Alderman W. J. Pringle, chairman of the city Council Committee on Gas, Oil & Electric Light, gave a most interesting address on the work of commissions in regulating Public Utilities rates and services. He spoke of the need of services of permanent commissions composed of experts capable of dealing fairly and intelligently with regulative problems.

Mr. Frank F. Fowle recommended a single state commission as a means of securing economy and efficiency, avoiding difficulties occasioned through division by artificial boundaries, absence of local political influence, ability to administer the law without discrimination, and opportunity to acquire a broad experience.

Naturally you want to know what the other telephone company is doing. Tell the readers of TELEPHONY just what you are doing, and comtemplate. This will encourage others to send in reports.

From Factory and Salesroom

Conventions: Indiana, Indianapolis, May 10, 11; Arkansas, Little Rock, May 16, 17.

The United Electric Company's Vertascope.

One of the great problems of the telephone, telegraph, electric light, street railway, and other aerial wire transmission companies in the past, has been in securing a rapid and accurate method of measuring altitudes, such as the height of poles above the ground, height of wires above railway crossings, distances between high tension and telephone lines, height of arc lamps above the street, length of poles required to properly clear shade trees along a prospective lead as well as the height of buildings. It was for this purpose that the Vertascope was designed and we believe that this instrument will meet with the general approval of those who are engaged in erecting and maintaining aerial wires.

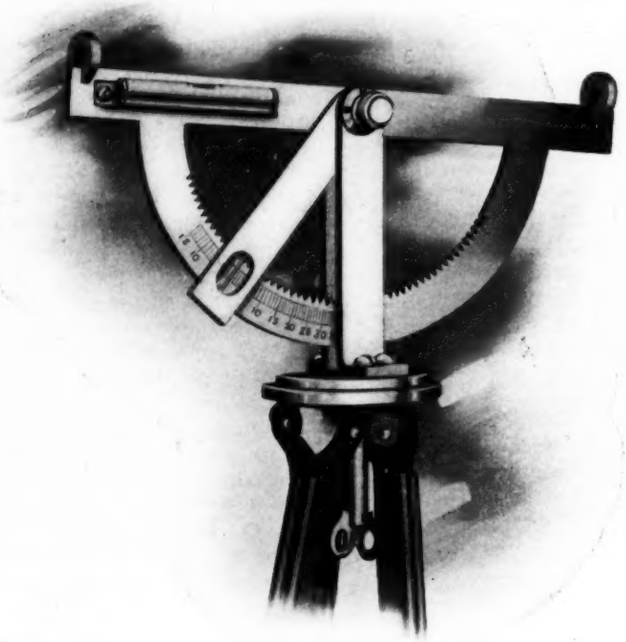


Fig. 1. The Vertascope.

Very often high poles are set where shorter ones would answer and again poles are set where it is afterwards found that it requires a riser or the substitution of another pole to meet the requirements.

One mistake of this nature will pay the first cost of an instrument. The Vertascope will measure heights varying from 0 to 100 feet with an accuracy of from two to six inches, depending upon the care of the operator.

No expert knowledge is necessary to use the Vertascope as the scale is calibrated to read direct in feet when placed fifty feet from the object to be measured.

However, when it is not convenient to place the instrument at fifty feet, measurements may be taken at twenty-five feet by dividing the readings by two or at one hundred feet by multiplying by two.

In some states the laws concerning the minimum elevation of wires over railway tracks are very strict. It is often necessary to determine if there is sufficient clearance of wires over the tracks to allow additional crossarms, or if it will be necessary to set new poles in order to comply with the law.

The measurement being made with the Vertascope, as shown in Fig. 2, was to determine if the poles were of sufficient height to allow electric light wires being placed on the same poles with the telephone wires, and still maintain the required distance over the track. This was an actual measurement made by an electric light company, having a combination pole line agreement with a telephone company. This measurement was completed in less than two minutes.

It is very difficult in building new leads to determine the height of poles necessary to properly clear shade trees. This is readily done by taking a measurement with the Vertascope as in Fig. 3. A tripod is not absolutely necessary but is recommended as a convenience. Accurate measurements can be made by placing the instrument on the top of a stake as shown.

The distance between high tension transmission lines and other lines is sometimes difficult to determine, as is also the distance of high tension lines above the ground. During the past year several men have been killed in the United States while making such measurements with tape lines. Fig. 4 shows a measurement being made with the Vertascope to determine the distance getween a nineteen thousand volt, high tension line, and the top of a fifty-foot telephone pole.

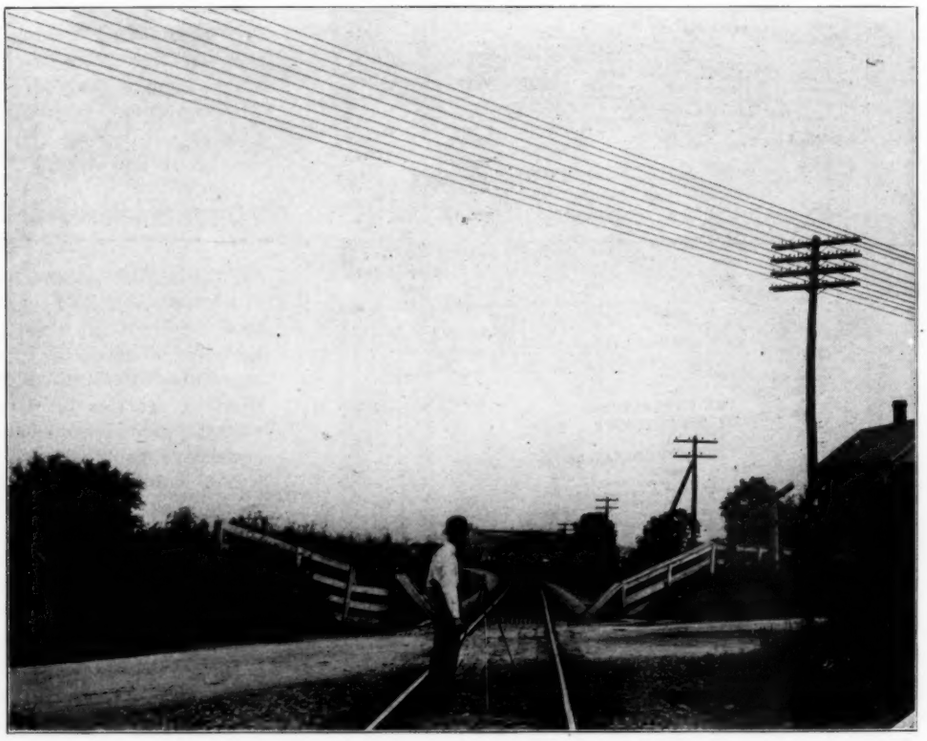


Fig. 2. Measuring Height of Wires Over Railroad.

In renewing poles it is necessary to know the height of the poles to be replaced. With the Vertascope no risk is taken and the measurement can be made in less time than by any other method. Ordinary measurement can be made with the Vertascope in about one minute. This is less time than is required to estimate the height of a pole by counting the steps and the results are much more satisfactory.

The Vertascope is substantially constructed of brass, heavily nickel plated and weighs but thirteen ounces. The rear sight is slotted, while the front sight and movable pointer contain cross wires of tempered german silver, and are especially constructed for accurate work. The instrument is easily leveled by revolving the pinion engaging the internal gear as shown in the illustration.

The Vertascope is less than eight inches long, stands but four and one-eighth inches high, and when folded may be easily carried in the coat pocket. The base is drilled and tapped to fit the screw of a standard camera tripod. A substantial quarter-sawed oak case with nickel plated hinges and catch is furnished with each instrument. Upon request, further information and prices either with or without tripod, will be furnished by the manufacturers, the United Electric Co., Marion, Ohio.

Fig. 3. Determining Height of Poles Required.

The Paragon Sellers Company's San Francisco office is now 544 Van Ness avenue, at which address the company is carrying a large stock of Ironite Duplex Drop Wire, Paragon Self-Tying Knobs and Paragon Ground Cones. The office is in charge of Hughson & Merton, to whom should be addressed all inquiries from California, Nevada and Arizona.

Western Lumber & Pole Co., Denver, Colo., has removed from the Charles Building to the new Electric Building.

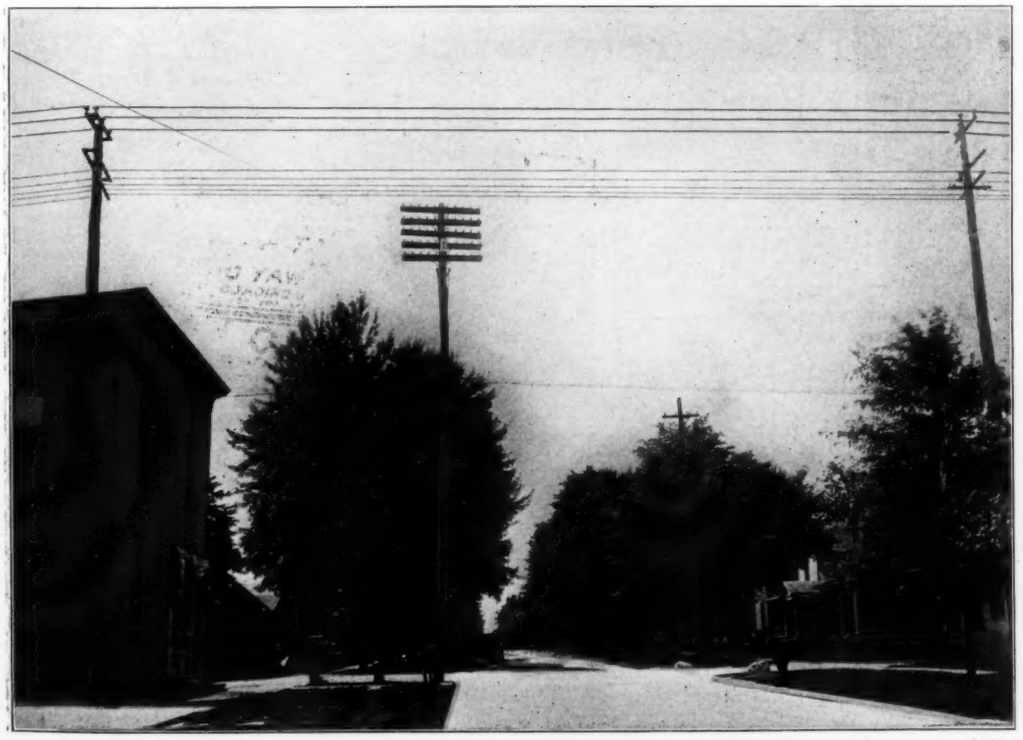


Fig. 4. Measuring Clearance Between 19,000 Volt Transmission Line and Telephone Wires.

The Kerite Insulated Wire & Cable Co., of New York City, announces that it has acquired the rights of its Western representative, the Watson Insulated Wire Co., and has established an office in the Peoples Gas Building. B. L. Winchell, Jr., formerly vice-president of the Watson company, is appointed Western sales manager.

Haynie, McRoberts & Lust, Merchants Loan & Trust Building, Chicago, is a new firm formed by the association of William Duff Haynie, Josiah McRoberts, and Herbert C. Lust. Mr. Haynie and Mr. Lust will give their attention to corporations, interstate commerce and general

practice. Mr. McRoberts will continue to devote his entire time to patent trade mark, copyright and unfair competition causes

Phoney Bill and the Independent Emblem.

Now comes Phoney Bill again with one of his usual sage remarks. "Follow that emblem!" he says, pointing to the

Phoney Bill, Says

*** * * FOLLOW THAT EMBLEM!!!**

1911			MAY			1911
SUN	MON	TUE	WED	THU	FRI	SAT
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

DECORATION DAY

Phoney Bill Makes His May Announcement.

Independent shield. Presumably this is the peroration of a Memorial Day address. At all events, it is a sound injunction, and a timely one.

J. G. Ihmsen Forms Connection with Chicago Company.

J. C. Ihmsen, formerly general manager of the American Electric Telephone Co., Chicago, has just returned to that city from an extended vacation in the South, and taken an important executive position with the Reliance Elevator Co. Mr. Ihmsen formed this connection shortly after leaving the American Electric Telephone Co., and is now engaged upon his work with his usual energy.

One of the members of this firm is Mr. John Anderson, formerly a telephone man, so members of the fraternity and acquaintances of Mr. Ihmsen know what to do when they hear of any new building requiring elevators. The Reliance company is one of the leaders in this business, and its trade extends throughout the United States and it has many foreign orders.

Some Quick Work by the Page & Hill Co.

The accompanying reproduction of a letter written by L. L. Hill of the Page & Hill Co., Minneapolis, to Will M. Traer, of Vinton, Iowa, needs no explanation. It is interesting as showing what that concern regards as good service to its customers. The Page & Hill Co. is an aggressive and up-to-the-minute corporation and has established an enviable rec-

CEDAR POSTS & POLES

Page & Hill Co.

MINNEAPOLIS, MINN.

April 26, 1911.

C-7410

Mr. Will M. Traer,

Vinton, Iowa.

Dear Sir:

To prove to you that you made no mistake in telling your friend, the city clerk, that we could get a shipment to him quick, will give you the results.

The order was received April 17th, loaded on April 18th, reached destination April 22nd, four days elapsing between the time the order was given us and the arrival of the shipment.

Again thanking you for turning this our way, we are

Yours very truly,

Page & Hill Co.

By L L Hill

H-C

Record of a Quick Pole Delivery.

ord for prompt attention to orders. This letter was sent to TELEPHONY from Vinton, and Mr. Hill may experience some surprise to see it in print. This paper, however, believes in recognizing a meritorious performance, and the one in point should certainly be thus classed.

New Baird Four Slot Pay Station.

Heretofore if a telephone company required a pay station with more than three slots it has been necessary to purchase cumbersome and expensive wood cabinet machines to supply the need for a pay station which will accept fifty-cent coins in

The New Baird Four-Slot Pay Station.

addition to the 5, 10 and 25 pieces. To meet the need for a smaller and less expensive four-slot pay station the Baird Electric Co. has, by an ingenious arrangement, added a fifty-cent slot to its standard sheet steel three-slot type, as shown in the accompanying illustration.

The additional cost of the four-slot pay station over the standard three-slot is but $2.

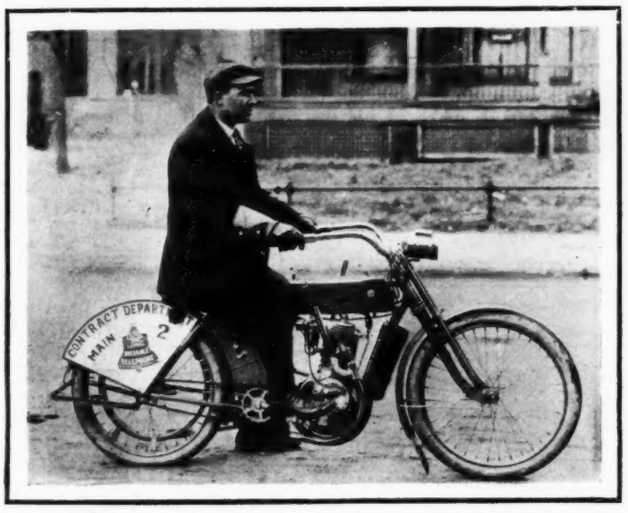
There are several advantages in using a four-slot machine at busy pay stations doing long-distance business. Among others are these:

1. A patron is frequently saved the inconvenience of changing fifty-cent pieces into quarters.
2. The time consumed in making change is saved.
3. A deposit in the fifty-cent slot takes about half the time required to use two quarters.

Further information regarding this improved type of machine can be secured from the Baird Electric Co., 3135 North Halsted street, Chicago. If desired, the company will submit samples for examination and trial.

The Motorcycle Efficient in Reducing Up-Keep.

Up-keep always has been a most important item, especially on rural and toll lines. Troubles occur, and while they may be small, and easily remedied, the expense and time consumed in getting to them makes even a minor repair a costly item. Many telephone companies with toll and rural lines have been experimenting with motorcycles,



The Motorcycle a Great Help to the Contract Department.

and obtained results that make them enthusiastic over the savings made as a result of a small investment.

Below is given a letter from the Rochester Telephone Co., to the manufacturer of its machine, which is typical of the feeling entertained by managers who have tried a good machine:

"Three years ago we purchased a Harley-Davidson motorcycle for the use of our trouble department in the care of 200 miles of toll lines and 195 rural telephones, together with other emergency work connected with the telephone business.

"The machine has been run approximately 22,000 miles without any mechanical trouble whatever. The cost of operation averages about $4 per month, and it does the work of three horses and rigs, while the actual time saved can hardly be estimated, for the trouble man goes out of town "like a flash of lightning" on a five or ten-mile trip, makes repairs, and returns before the manager can call time on him.

"We consider the machine our most valuable asset, and we would miss it very much if deprived of its use. If it ever wears out you may rest assured that the one to take its place will be a Harley-Davidson."

The Tri-State Telephone Co., of Minneapolis, has adopted a handsome REMOVABLE DIRECTORY COVER for its pay-station directories. The cover is printed in three colors, with the shield on the front and a map of the territory on the back cover. The covers were furnished by the Arnold Supply Co., of Milwaukee.

The Rome Wire Co.'s May Calendar.

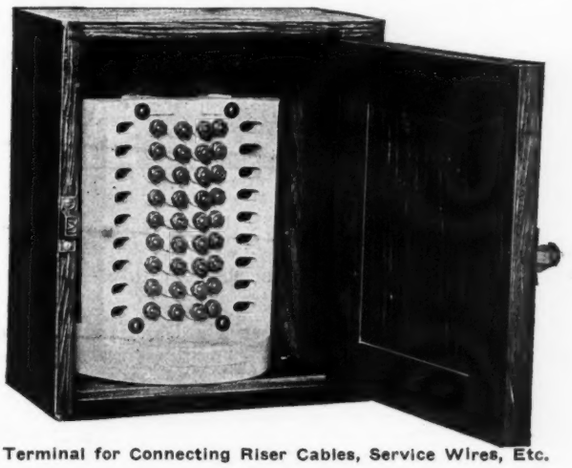
Accompanying is a reproduction of the monthly calendar of the Rome Wire Co., Rome, N. Y. The calendar is done

The Rome Company's May Girl.

on a private mailing card and copies will be sent the trade upon application to the factory.

A New Floor Terminal Made by Frank B. Cook.

The terminal here illustrated, made by Frank B. Cook, Chicago, is intended to fit into the same scheme of distribution that employs Cook's building terminals, described in the April 22nd issue. The floor terminal takes the local end of riser cables terminating in the building terminal cabinet. Wires to the telephones are carried out of the floor terminal. Every



Terminal for Connecting Riser Cables, Service Wires, Etc.

conductor is easily accessible for inspection or test at any time, but joints are thoroughly protected. Interior construction can be made absolutely neat as well as substantial, and as nearly "trouble proof" as possible, by using this class of terminal. This type is exclusively used in Chicago.

In the Rural Line Districts

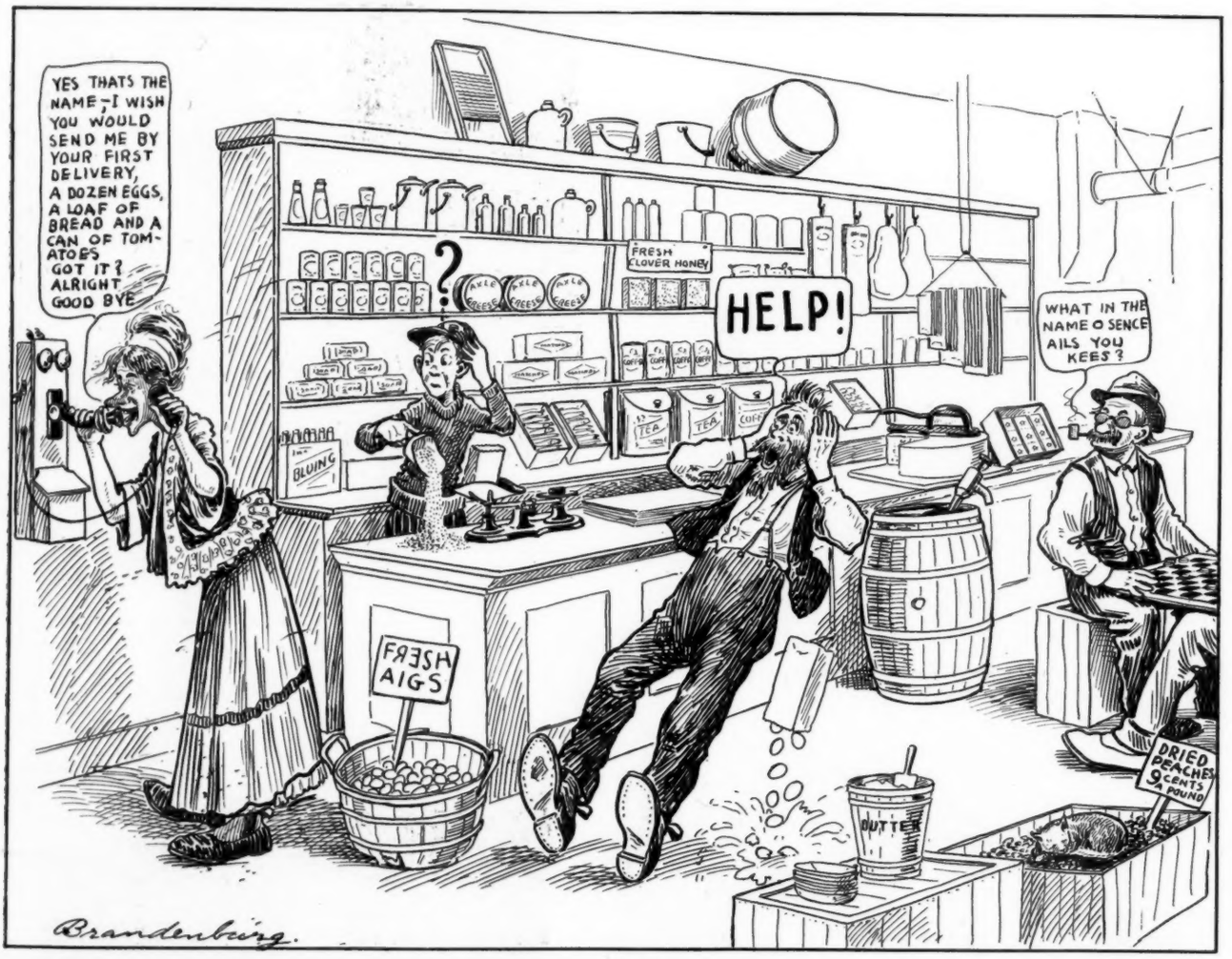
The high wind of Saturday got the telephone wires so badly crossed that you could talk to seventeen different localities at one time and still not get the party wanted. The slack in the wires should be taken up some and it would prevent much of this mix-up.—*Cassoday (Kansas) Times.*

C. Welin will be connected with the Bala Telephone Co., of which he has become a member.—*Manhattan (Kansas) Nationalist.*

The patrons of the farmers' telephone company gave Mrs. W. B. Emerine a farewell reception Tuesday. About forty went in on her with well filled baskets and completely surprised her. A fine dinner was served. Rev. James Kirkwood, on behalf of the patrons, presented Mrs. Emerine with a fine set of silver knives and forks, and Miss Gladys with a souvenir spoon for the excellent work they have done in the central office for the past eight years. Mrs. Emerine responded, thanking the friends for the kindness, and said that with the exception of two or three, she had no complaint to make of the patrons in her eight years' service.—*Corning (Ia.) Republican.*

Assaria people will not have to tug violently at a lever to ring up central in the future. Ed. Armstrong, of the Salina Telephone Co., went to Assaria today to install a battery device, whereby the mere pressing of a button will tell central all about it. This will be a decided improvement over the old style, which has been in use on the Assaria line. There is one advantage in the "button-pressing" style over the central energy style used in Salina. If central don't get mad, you can press the button long enough to wake the dead, and thus enjoy the satisfaction of a sweet revenge.—*Salina (Kansas) Union.*

The patrons of the Home Telephone Co. are glad to know that J. Carl Swaim, the efficient young manager who has given such general satisfaction, has accepted the office of superintendent for another year. Misses Mona and Mamie Hadley will again have charge of the exchange office. On Monday evening a contract was signed which opens the way for the extension of the "free-line" system to Rockville, an improvement which will be much appreciated by citizens of this part of the county.—*Bloomingdale Letter Rockville (Ind.) Republican.*


YES THATS THE NAME—I WISH YOU WOULD SEND ME BY YOUR FIRST DELIVERY, A DOZEN EGGS, A LOAF OF BREAD AND A CAN OF TOMATOES GOT IT? ALRIGHT GOOD BYE
?
FRESH CLOVER HONEY
HELP!
WHAT IN THE NAME O SENCE AILS YOU KEES?
FRESH AIGS
BLUING
BUTTER
DRIED PEACHES 9 CENTS A POUND
Brandenburg.

"Nerve of some people." Saturday morning a lady living near the grocery store of C. J. Kees walked in and asked to use the telephone. Being granted that request, she called up a rival grocer and to him gave an order for a dozen eggs, a loaf of bread and a can of tomatoes. She swept out of the store, leaving Mr. Kees gasping for breath. He was in a daze all day and gave thirteen for a dozen most of the time.—*Cedar Rapids Republican.*

There is to be a new telephone line run down Soo Coolie that is to be affiliated with the farmers' line and connect with the Central at this place. This seems to be the outcome of the telephone holders of the old Soo Coolie line deciding not to turn their line over to the farmers' line, which was decided some time ago by a meeting of the stockholders held at this place.—*Prairie Du Chien (Wis.) Courier.*